

CODE COMPLIANCE

PLEASE BE ADVISED: ALL WORK SHALL FOLLOW THE ADOPTED CODES INCLUDING:

- 2018 INTERNATIONAL BUILDING CODE
- 2017 NATIONAL ELECTRICAL CODE (NFPA 70)
- 2006 INTERNATIONAL CODE COUNCIL ELECTRICAL ADMINISTRATIVE ILLINOIS ENERGY CONSERVATION CODE
- CURRENT EDITION LOCAL AMENDMENTS PER NAPERVILLE MUNICIPAL CODE
- TELECOMMUNICATIONS INDUSTRY ASSOCIATION (TIA) 222-H

FOR ANY CONFLICTS BETWEEN SECTIONS OF LISTED CODES AND STANDARDS REGARDING MATERIAL, METHODS OF CONSTRUCTION, OR OTHER REQUIREMENTS, THE MOST RESTRICTIVE REQUIREMENT SHALL GOVERN. WHERE THERE IS CONFLICT BETWEEN A GENERAL REQUIREMENT AND A SPECIFIC REQUIREMENT, THE SPECIFIC REQUIREMENT SHALL GOVERN.



SITE NUMBER: IL0776
SITE NAME: IL0776
PROJECT: NSB
FA CODE: 12565616
US ID: 503082
SITE ADDRESS: 1301 CLYDE DRIVE
NAPERVILLE, IL 60565

PROJECT INFORMATION

APPLICANT: AT&T
 95 W ALGONQUIN RD
 ARLINGTON HEIGHTS, IL 60005

PROPOSED USE: TELECOMMUNICATIONS FACILITY

STRUCTURE TYPE: MONOPOLE TOWER

PROPERTY OWNER: CITY OF NAPERVILLE
 400 S. EAGLE STREET
 NAPERVILLE, IL 60540

CONTACT PERSON: TIM FELSTRUP, PROJECT MANAGER
 400 S. EAGLE STREET
 NAPERVILLE, IL 60540
 (630) 420-6692
 FELSTRUP@NAPERVILLE.IL.US

JURISDICTION: CITY OF NAPERVILLE
COUNTY: DUPAGE COUNTY
LATITUDE: 41.747908° N
LONGITUDE: -88.135375° W
LAT/ LONG TYPE: NAD 83
GROUND ELEVATION: ±687 FT AMSL
POWER COMPANY: COMED
PHONE: (800) 334-7661
TELEPHONE COMPANY: AT&T
PHONE: (800) 357-0902

REFER TO ANTENNA MOUNT FRAME ANALYSIS BY APEX ENGINEERS, INC. DATED 11/11/2025.
 TOWER STRUCTURAL ANALYSIS BY OTHERS.

VICINITY MAP

DIRECTIONS: DEPART O'HARE INTERNATIONAL. MERGE ONTO I-190 E 0.7 MI. TAKE EXIT 1D TOWARD I-294 S/INDIANA/S TOLLWAY TOLL ROAD 0.4 MI. MERGE ONTO I-294 S 8.7 MI. TAKE EXIT 31A TO MERGE ONTO I-88 W TOWARD AURORA TOLL ROAD 12.1 MI. TAKE EXIT 127 TOWARD NAPERVILLE RD 0.7 MI. USE THE RIGHT LANE TO MERGE ONTO FREEDOM DR 0.1 MI. USE THE RIGHT LANE TO TURN RIGHT ONTO E WARRENVILLE RD 0.3 MI. TURN RIGHT AT THE 1ST CROSS STREET ONTO N NAPER BLVD/NAPERVILLE RD. CONTINUE TO FOLLOW N NAPER BLVD 4.4 MI. TURN RIGHT ONTO 75TH ST 0.8 MI. USE THE 2ND FROM THE LEFT LANE TO TURN LEFT ONTO S WASHINGTON ST 0.1 MI. TURN RIGHT ONTO BUNTING LN 240 FT. TURN RIGHT TO STAY ON BUNTING LN 0.3 MI. TURN RIGHT ONTO CLYDE DR. DESTINATION WILL BE ON THE LEFT 197 FT, ARRIVE AT IL0776

SCOPE OF WORK

AZIMUTH: 30°/150°/270°
RAD: 190°

NEW EQUIPMENT TO BE INSTALLED:

- USE EXISTING/NEW 190' HIGH MONOPOLE
- INSTALL PROPOSED AT&T ANTENNAS/RRUS MOUNTED ON NEW SABRE 12' HD TENSION PLATFORM (DRAWING #C10855721C)
- INSTALL (9) NEW ANTENNAS (TYP.3 PER SECTOR)
- INSTALL (9) NEW RRUS (TYP.3 PER SECTOR)
- INSTALL (2) NEW RAYCAP DC9-48-60-24-8C-EV SQUIDS
- INSTALL (6) NEW #6 AWG DC POWER TRUNK CABLES
- INSTALL (2) NEW 24-PAIR FIBER TRUNK CABLES
- INSTALL NEW AT&T EQUIPMENT WITHIN EXISTING SHELTER BUILDING
- INSTALL (1) NEW RAYCAP RAY-38 CABINET
- INSTALL (1) NEW NETSURE 7100 POWER PLANT
- INSTALL (2) STRINGS OF SBS190F BATTERIES
- INSTALL 30 kW, 38 kVA, 60 Hz DIESEL GENERATOR GENERAC SDC030
- INSTALL (1) NEW DC50 (TO BE PROVIDED BY AT&T/MASTEC)
- INSTALL D2 SIAD & GPS ANTENNA
- INSTALL (1) 6651; (1) 6672; & (1) XMU TRI-MODE BBU FOR LTE/5G/C-BAND
- INSTALL 1'-0" WIDE CABLE TRAY
- INSTALL NEW AT&T ICE BRIDGE
- INSTALL NEW METER & NEW FIBER EQUIPMENT

DRAWING INDEX

SHEET	DESCRIPTION
IL0776-T01	TITLE SHEET
IL0776-C01	OVERALL SITE PLAN
IL0776-C02	ENLARGED SITE PLAN WITH EQUIPMENT LAYOUT
IL0776-C03	TOWER ELEVATION
IL0776-C04	ANTENNA LAYOUT
IL0776-A01	RAYCAP RAY-38 CABINET SPECIFICATIONS
IL0776-A02	VERTIV NETSURE 7100 PP SPECIFICATIONS
IL0776-A03	GENERAC SDC030 DIESEL GENERATOR SPECIFICATIONS
IL0776-A04	EQUIPMENT SPECIFICATIONS 1
IL0776-A05	EQUIPMENT SPECIFICATIONS 2
IL0776-A06	EQUIPMENT SPECIFICATIONS 3
IL0776-A07	ANTENNA MATRIX
IL0776-A08	COAX COLOR CODING
IL0776-A09	FIBER-OPTIC JUMPER COLOR CODING
IL0776-A10	CONSTRUCTION NOTES
IL0776-E01	UTILITY PLAN
IL0776-E02	ELECTRICAL NOTES & DETAILS
IL0776-G01	GROUNDING PLAN & DETAILS
IL0776-G02	GROUNDING DETAILS & NOTES

REFERENCE MATERIALS

THESE DRAWINGS ARE PREPARED BASED ON RFDS DATED 04/29/2025 REVISION # V1.0 GENERAL CONTRACTOR TO VERIFY AND INCORPORATE MOST RECENT VERSION OF RFDS PRIOR TO CONSTRUCTION.

I HEREBY CERTIFY THAT THESE PLANS WERE PREPARED UNDER MY DIRECT SUPERVISION AND TO THE BEST OF MY PROFESSIONAL KNOWLEDGE THEY COMPLY WITH THE REQUIREMENT OF ALL APPLICABLE CODES AND ORDINANCES.

[Signature] DATE: 03/06/2026

RAJESH K. GOYAL
 ILLINOIS S.E. LICENSE # 081-005096
 EXPIRES 11-30-2026

PROJECT CONSULTANTS

SITE ACQUISITION: MASTEC NETWORK SOLUTIONS
 1890 SUNCAST LANE,
 BATAVIA, IL 60510
 JACOB STRICKER
 PHONE: (810) 623-3589

ENGINEER: APEX ENGINEERS, INC.
 500 EAST 22ND STREET, SUITE B
 LOMBARD, IL 60148,
 RAJESH K. GOYAL
 PHONE: (630) 627-1800

RF ENGINEER: AT&T MOBILITY
 DORU BUCUR
 DB151C@ATT.COM

DO NOT SCALE DRAWINGS

CONTRACTOR SHALL VERIFY ALL PLANS & EXISTING DIMENSIONS & CONDITIONS ON THE JOB SITE & SHALL IMMEDIATELY NOTIFY THE ARCHITECT OR ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

HANDICAPPED REQUIREMENTS
 FACILITY IS UNMANNED & NOT FOR HUMAN HABITATION. HANDICAP ACCESS REQUIREMENTS NOT REQUIRED.

PLUMBING REQUIREMENTS
 FACILITY HAS NO PLUMBING

FIRE PROTECTION NOTE
 NONE

SPECIAL NOTES

- ALL WORK SHALL BE INSTALLED IN CONFORMANCE WITH CURRENT AT&T CONSTRUCTION INSTALLATION GUIDE.
- EXISTING CONDITIONS MUST BE VERIFIED IN FIELD PRIOR TO CONSTRUCTION. IF THERE IS ANY SIGNIFICANT DEVIATION FROM THE DESIGN DRAWINGS, NOTIFY ENGINEER IMMEDIATELY.
- STATEMENT THAT COMPLIANCE WITH THE ENERGY CODE IS NOT REQUIRED.
- SCOPE OF WORK DOES NOT INVOLVE MODIFICATIONS TO EXTERIOR ENVELOPE OF BUILDING, HVAC SYSTEMS OR ELECTRICAL LIGHTING.

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 500 East 22nd Street, Suite B
 Lombard, Illinois 60148
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 Fax. (630) 627-1165

APEX JOB No. NS22-069

IL0776

SITE NO. IL0776

1301 CLYDE DRIVE
 NAPERVILLE, IL 60565

NO.	DATE	REVISIONS	BY	CHK	APP'D
G	03/06/26	FINAL CDs REVISED NEW GENERATOR MODEL	PB	RG	RG
F	01/30/26	FINAL CDs REVISED PER CITY COMMENTS	PB	RG	RG
E	01/08/26	FINAL CDs REVISED PER CITY COMMENTS	PB	RG	RG
D	11/11/25	FINAL CDs ISSUED FOR CONSTRUCTION	PB	RG	RG
C	06/24/25	90% CDs ISSUED FOR REVIEW	PB	RG	RG

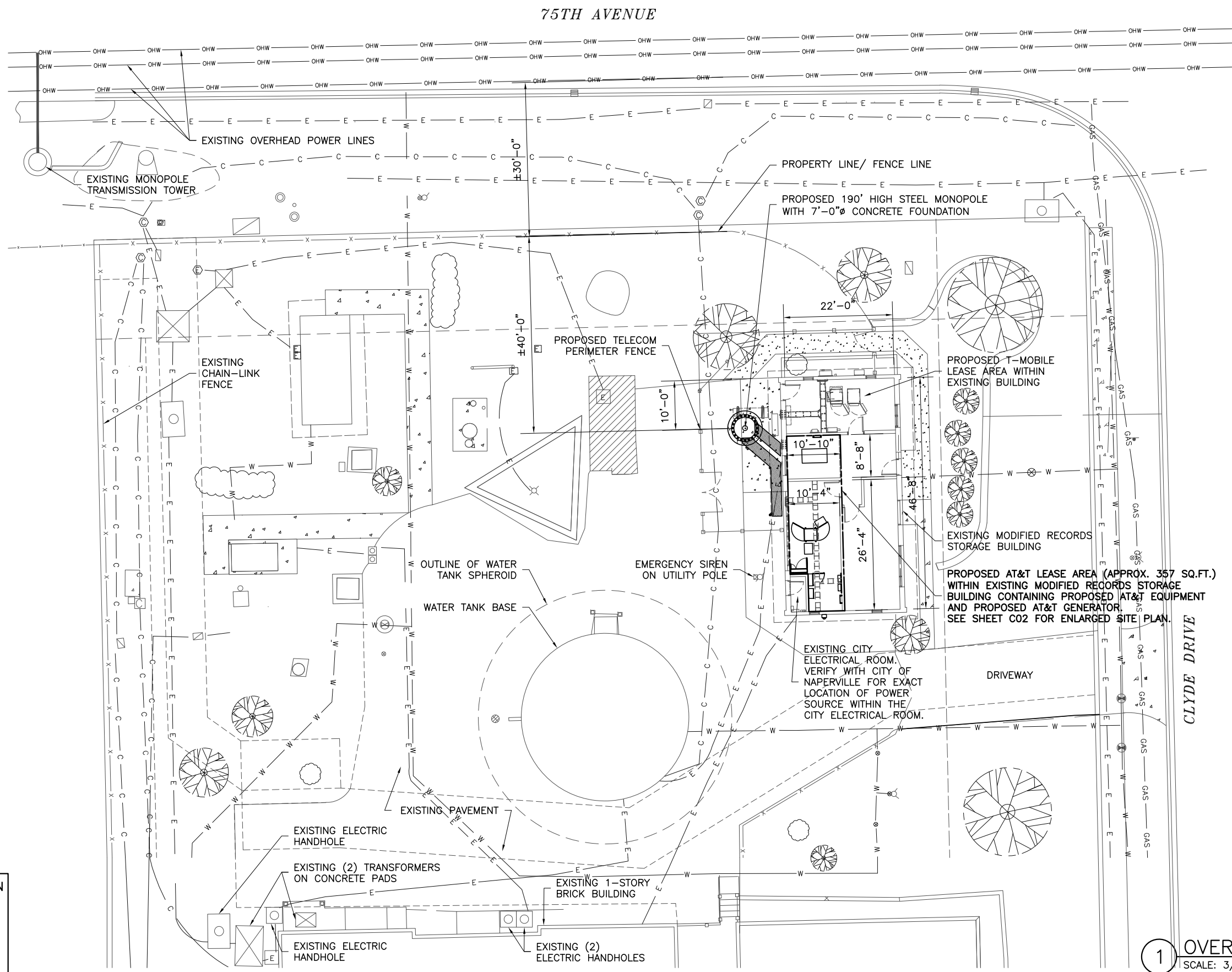
SCALE: AS SHOWN DESIGNED BY: DRAWN BY:

AT&T MOBILITY

TITLE SHEET

DRAWING NUMBER: IL0776-T01

REV: G



NOTE: EXISTING SITE INFORMATION IS BASED ON CONSTRUCTION DRAWINGS PREPARED BY KCS CORPORATION DATED 04-15-2025. CONTRACTOR TO VERIFY EXISTING CONDITION/ SPACE REQUIRED TO INSTALL PROPOSED EQUIPMENT.

1 OVERALL SITE PLAN
SCALE: 3/64"=1'-0"



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NO.	DATE	REVISIONS	BY	CHK	APP'D
SCALE: AS SHOWN		DESIGNED BY:	DRAWN BY:		

AT&T MOBILITY	
OVERALL SITE PLAN	
DRAWING NUMBER	REV
IL0776- C01	G

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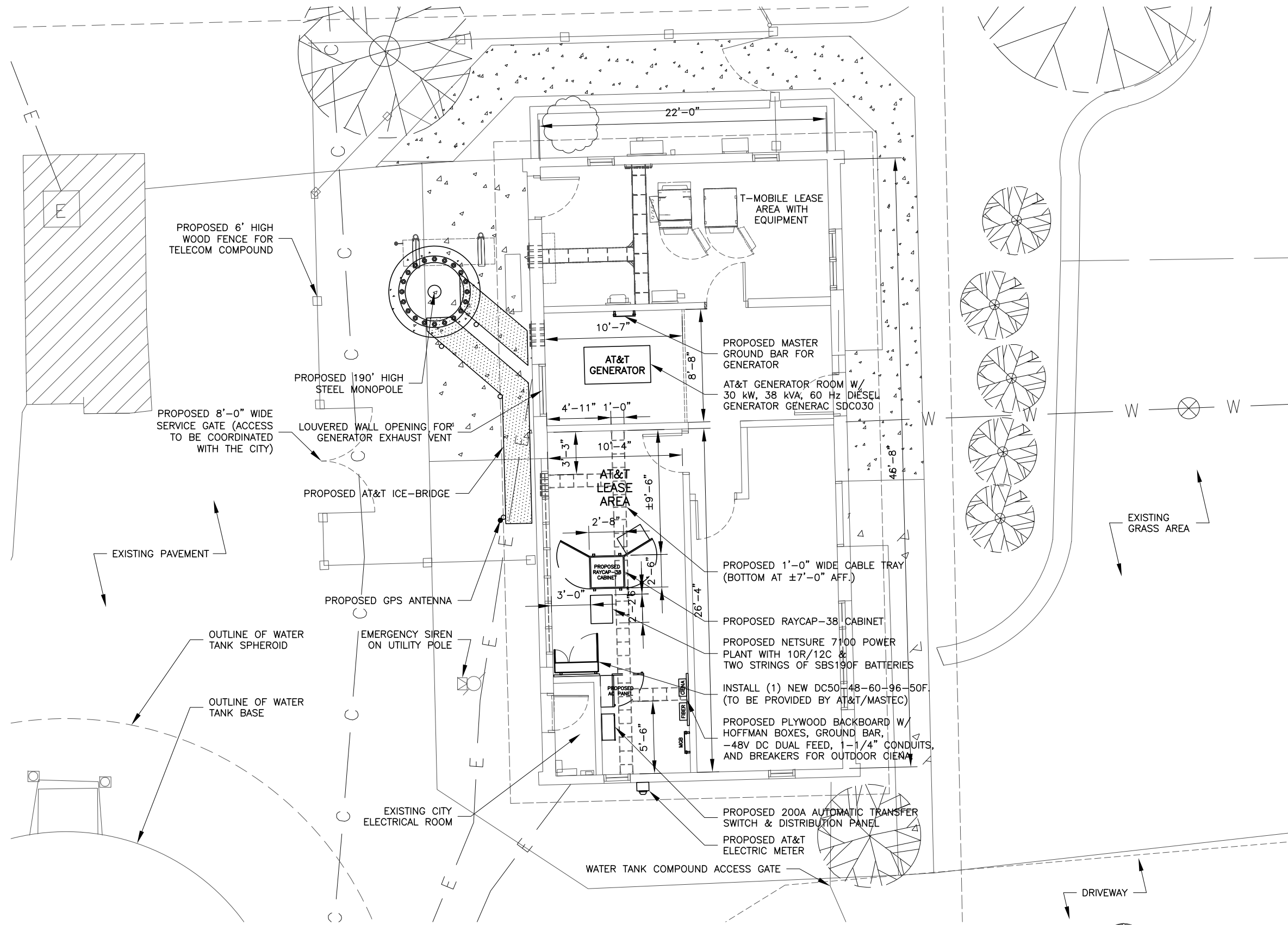
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2

1

11 x 17" B SIZE

- NOTES:**
- EXISTING SPACE FOR PROPOSED EQUIPMENT ASSUMED TO BE ADEQUATE, PRIOR TO INSTALLATION, COORDINATE FINAL LOCATION WITH CONSTRUCTION MANAGER.
 - COORDINATE WITH CONSTRUCTION MANAGER FOR THE PROVISION OF DC CIRCUIT BREAKERS AND OTHER ANCILLARY ITEMS TO SUPPORT THE NEW EQUIPMENT.
 - PROPERLY BOND ALL EQUIPMENT AND CONDUCTIVE SURFACES TO EXISTING GROUND PER NEC AND AT&T STANDARDS.



1 ENLARGED SITE PLAN WITH EQUIPMENT LAYOUT
SCALE: 1/8"=1'-0"



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SCALE: AS SHOWN		DESIGNED BY:	DRAWN BY:		

AT&T MOBILITY	
ENLARGED SITE PLAN WITH EQUIPMENT LAYOUT	
DRAWING NUMBER	REV
IL0776-C02	G

6

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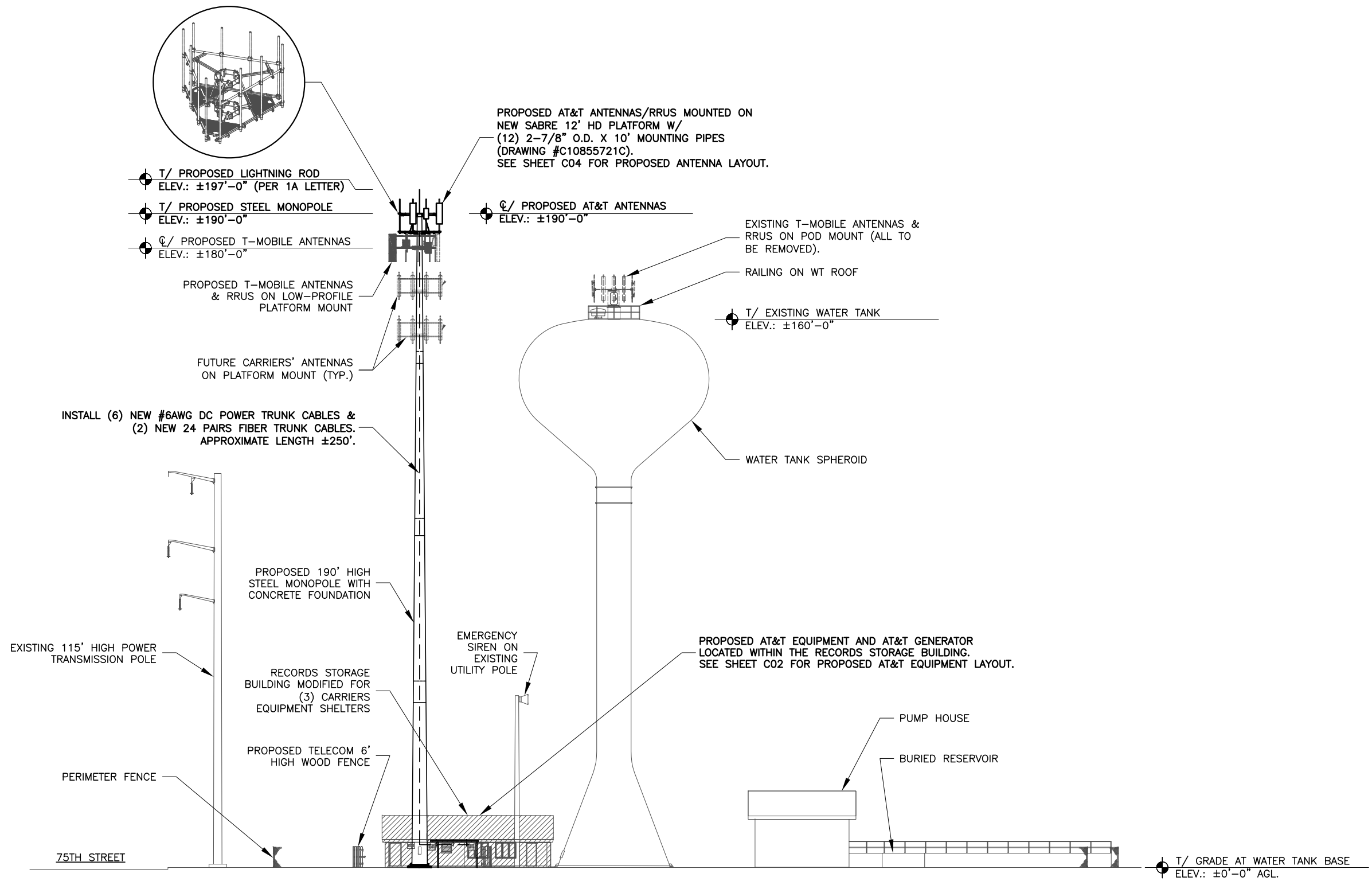
4

3

2

1

11 x 17" B SIZE



1 TOWER ELEVATION
SCALE: 1/32"=1'-0"

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NAPERVILLE, IL 60565



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AT&T MOBILITY

TOWER ELEVATION

DRAWING NUMBER

IL0776-C03

REV

G

6

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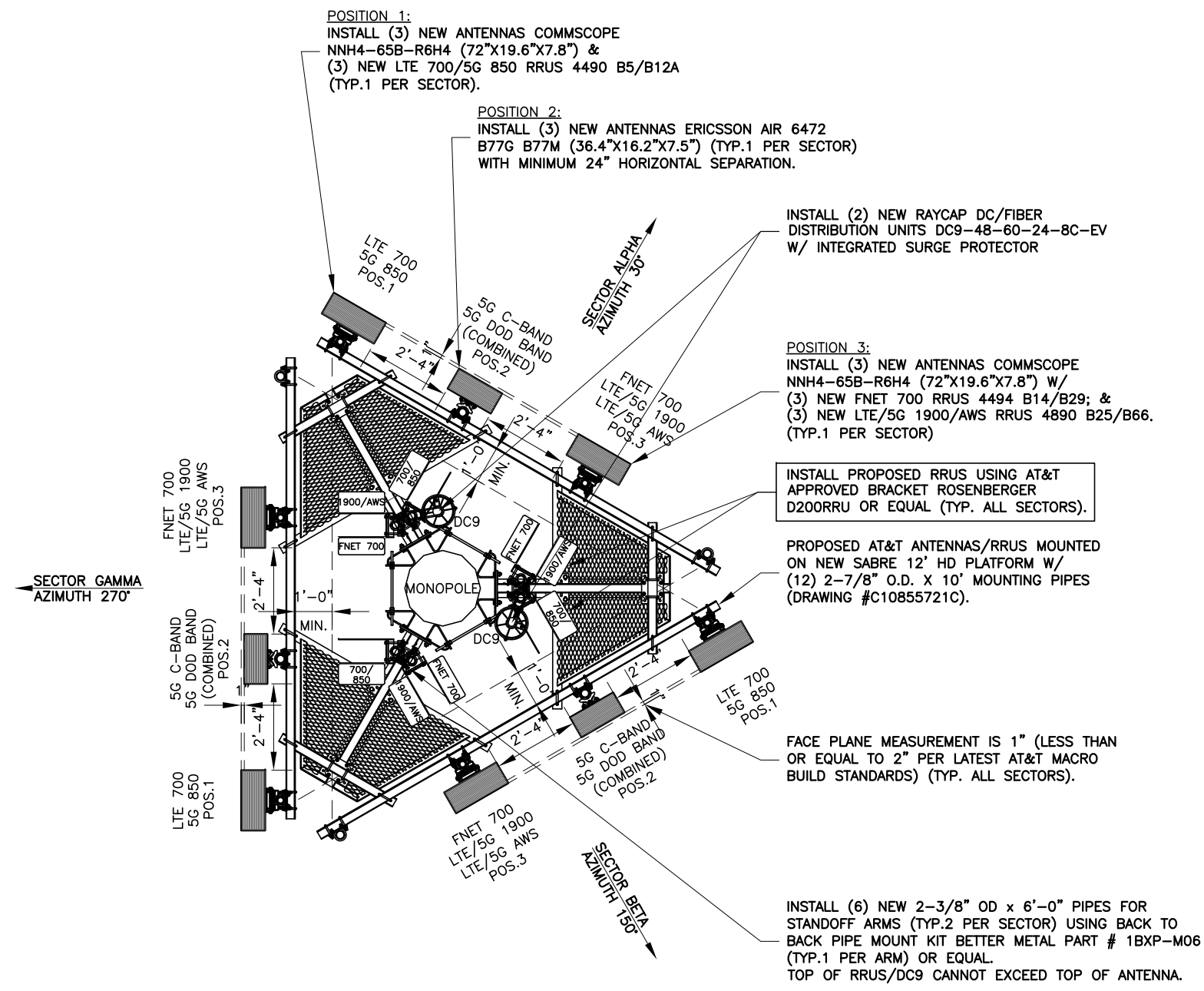
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3

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1

11 x 17" B SIZE



1 PROPOSED ANTENNA LAYOUT
SCALE: 1/4"=1'-0"

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AT&T MOBILITY	
ANTENNA LAYOUT	
DRAWING NUMBER	REV
IL0776-C04	G

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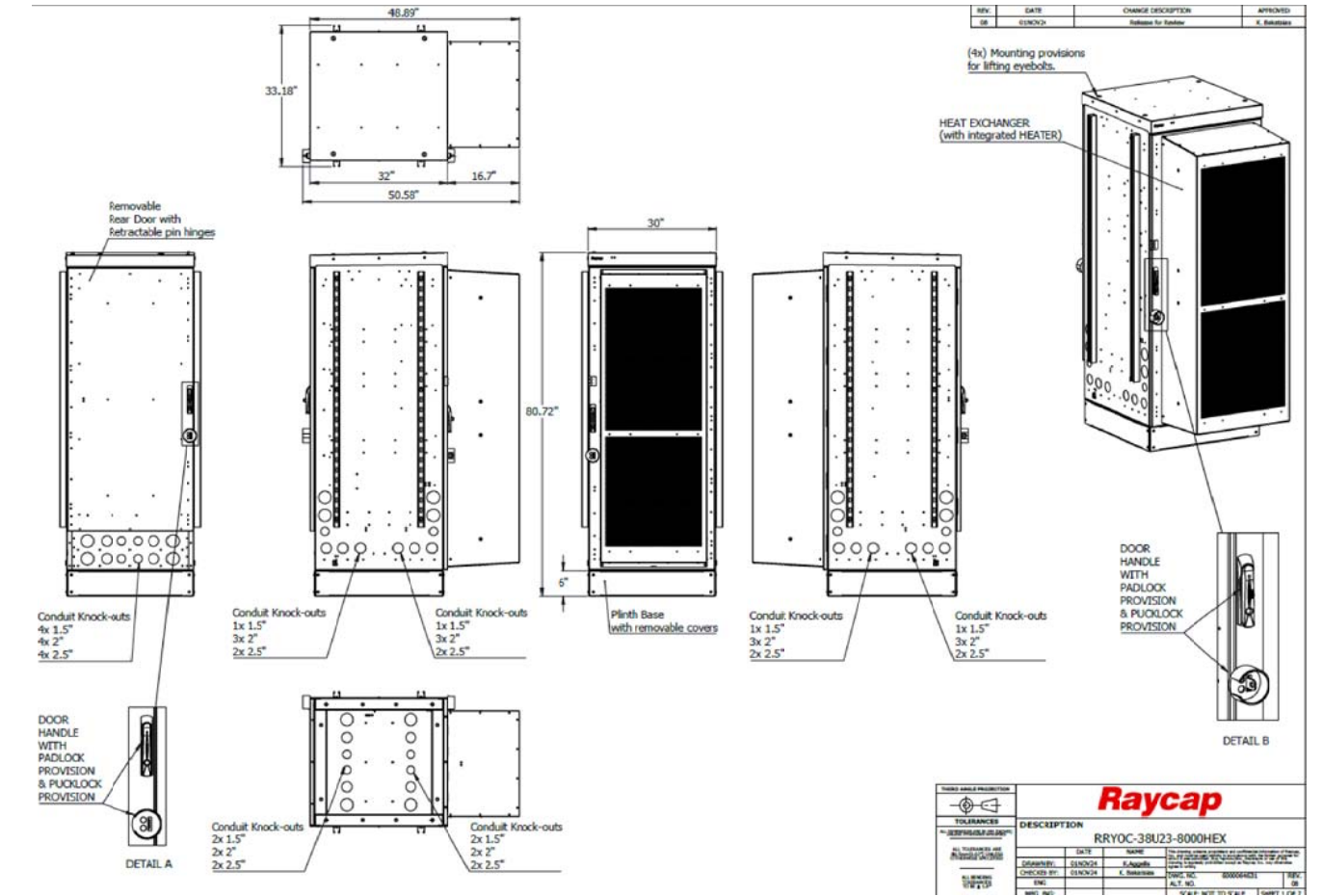
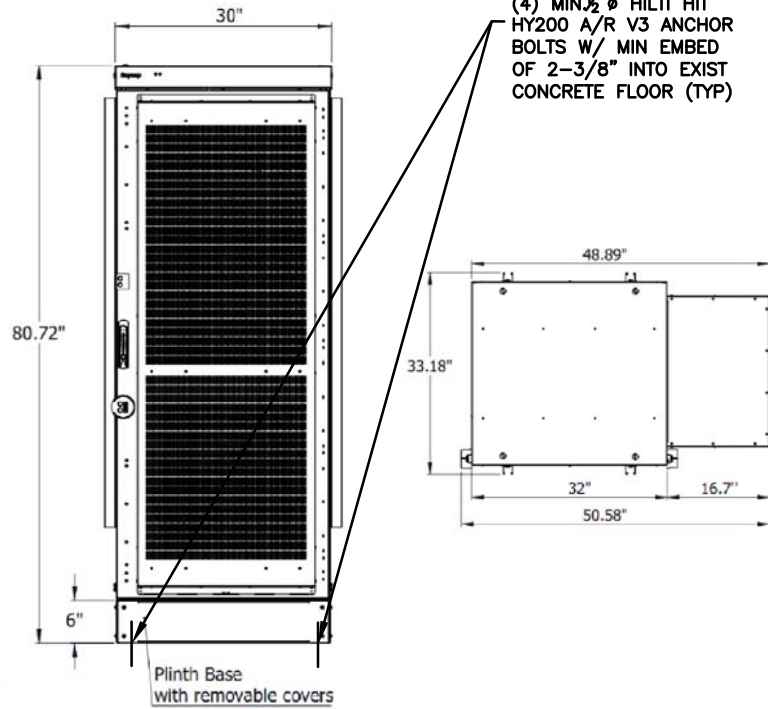
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2

1

11 x 17" B SIZE

RAY-38 Cabinet

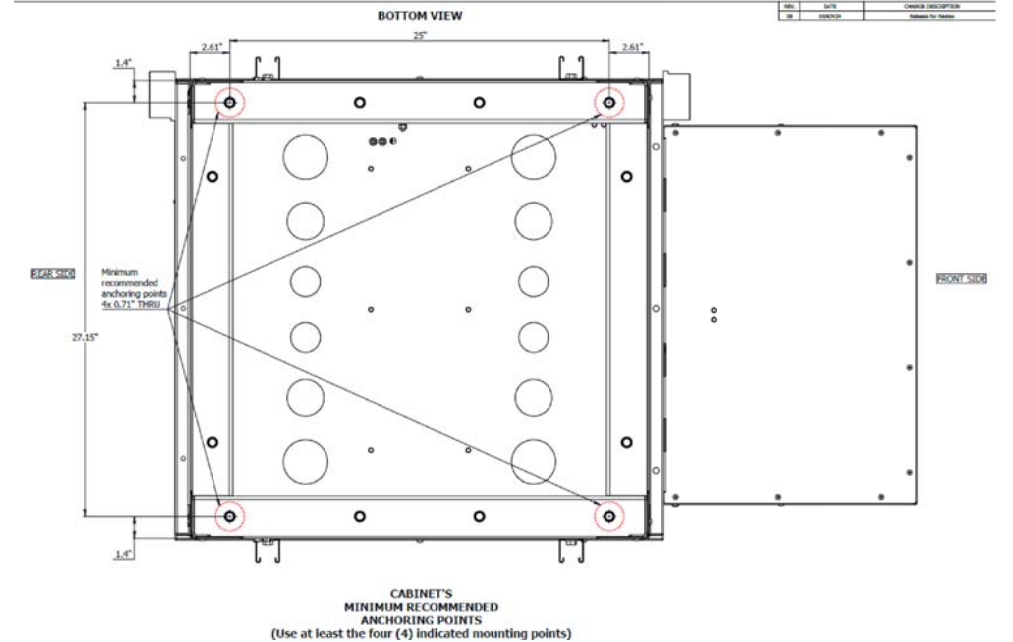
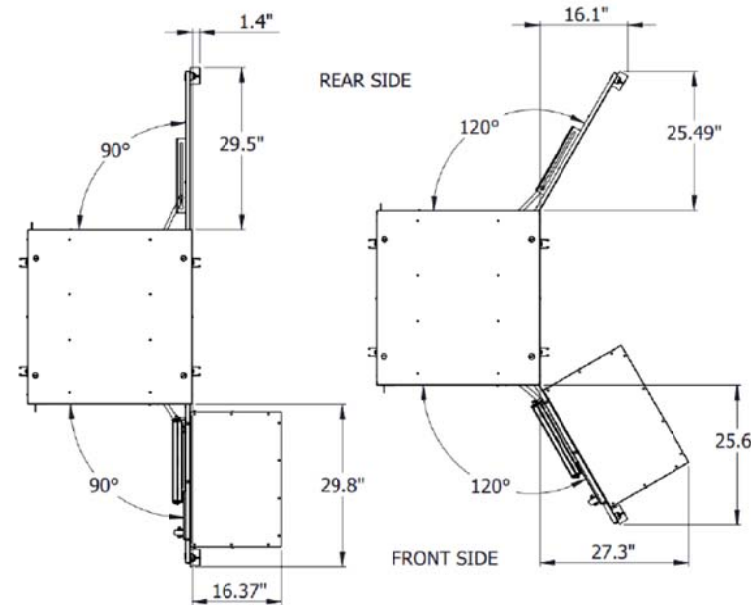


RAY-38 CABINET SPECIFICATIONS:

PHYSICAL DIMENSIONS
80.72" H X 30" W X 32" D

ENCLOSURE FEATURES

- SINGLE BAY OUTDOOR CABINET (TYPE 4 PER UL50E). IT CAN ALSO BE USED AS AN INDOOR CABINET
- GR-487 CERTIFIED
- 38U OF 23" RACK SPACE
- 4x EXTERNAL, REMOVABLE LIFTING EYEBOLTS AND ROOF COVER PLUGS
- 2x UNISTRUTS PER SIDE
- 1x RUBBER PAD
- DURABLE POWDER-COATED ALUMINUM DESIGN TO RESIST CORROSION
- REMOVABLE SWINGOUT PAD/PUCK-LOCKABLE FRONT DOOR WITH HEX SWINGOUT PAD/PUCK-LOCKABLE REAR DOOR FOR EQUIPMENT MAINTENANCE/INSTALLATION PURPOSES
- 8kW THERMOSIPHON HEX WITH INTEGRATED HEATER 1.5kW
- HINGED BACK PANEL
- 200A, 20x POSITIONS DISTRIBUTION PANEL WITH 4x 100A TEMPERATURE CONTROLLED LOAD DISCONNECT CONTACTORS
- 200A, DC TERMINAL BLOCK
- 3RU FIBER MANAGEMENT TRAY
- MULTIPLE BOTTOM ENTRY OPTIONS
- INTERIOR 29-POSITION MAIN GROUND BAR (MGB) AND DOUBLE EXTERNAL CHASSIS GROUND POINTS
- CABLE MANAGEMENT/TIE DOWNS (LEFT AND RIGHT SIDES)
- FIBER RACEWAY (FULL HEIGHT, LEFT SIDE)
- DOCUMENT AND LOGBOOK STORAGE, LAPTOP TABLE (FRONT DOOR)
- 2x DC-POWERED LED INTERIOR LIGHTS
- 6x NTC TEMPERATURE SENSORS
- ALARM BLOCK FOR THE TERMINATION OF THE SIGNALING WIRES (E.G., DOOR OPEN, HEX ALARM, GENERIC PDU ALARM ETC.).



1 RAYCAP RAY-38 CABINET SPECIFICATIONS

SCALE: NTS

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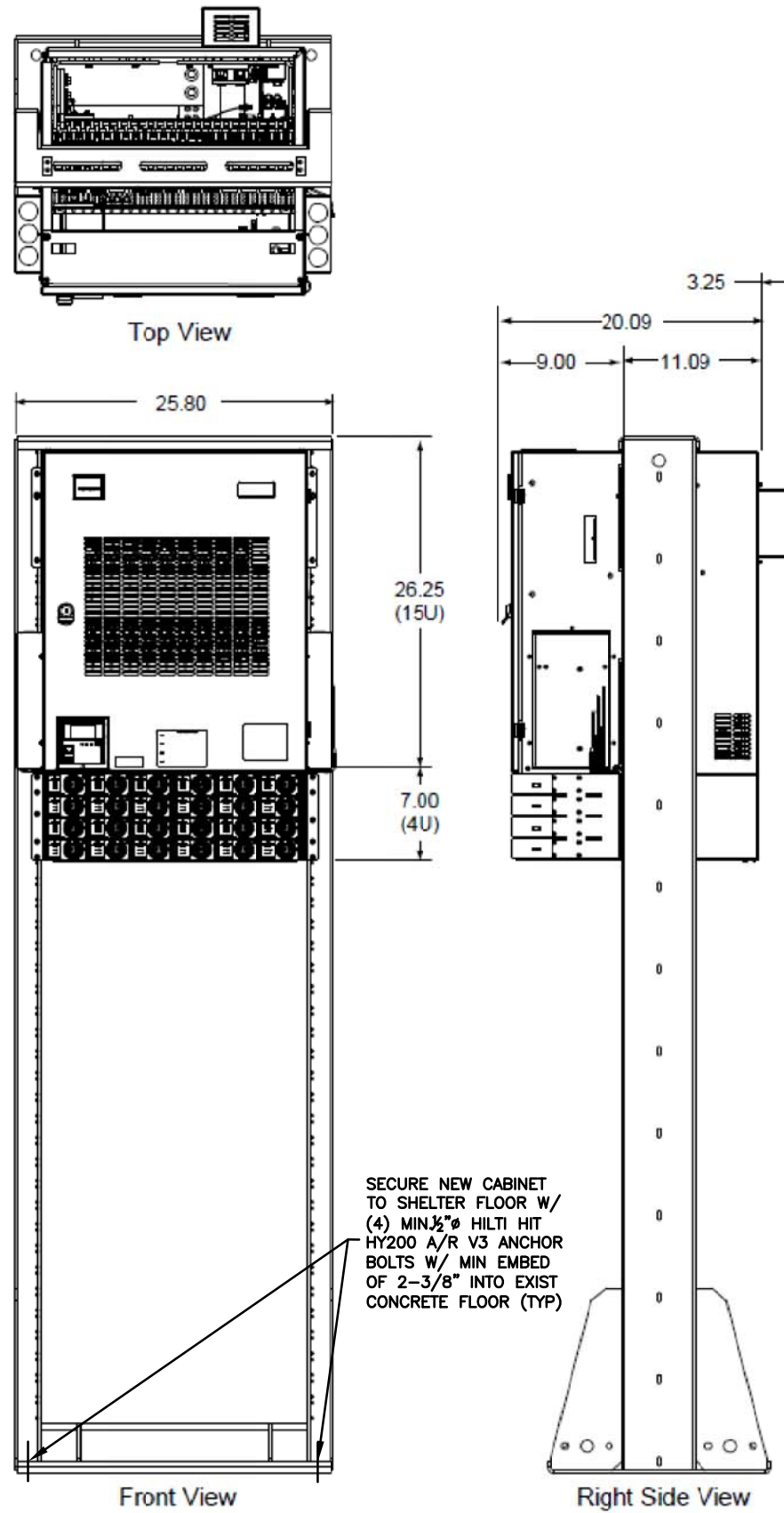
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AT&T MOBILITY	
RAYCAP RAY-38 CABINET SPECIFICATIONS	
DRAWING NUMBER	REV
IL0776-A01	G

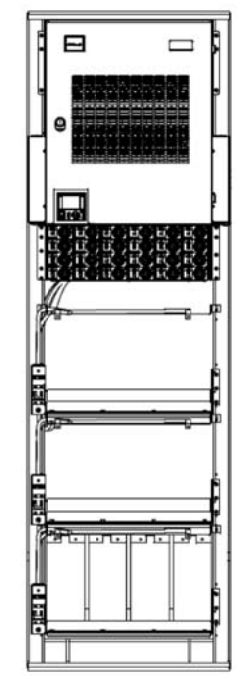
- Notes:
1. All dimensions are in inches.
 2. Finish: Textured Gray
 3. Relay Rack Dimensions:
84"H x 25.8"W x 18"D
 4. Relay Rack Available
Mounting Positions: 26RU
(1RU = 1.75") (accepts #12 hardware)



1 VERTIV NETSURE 7100 POWER SYSTEM SPECIFICATIONS

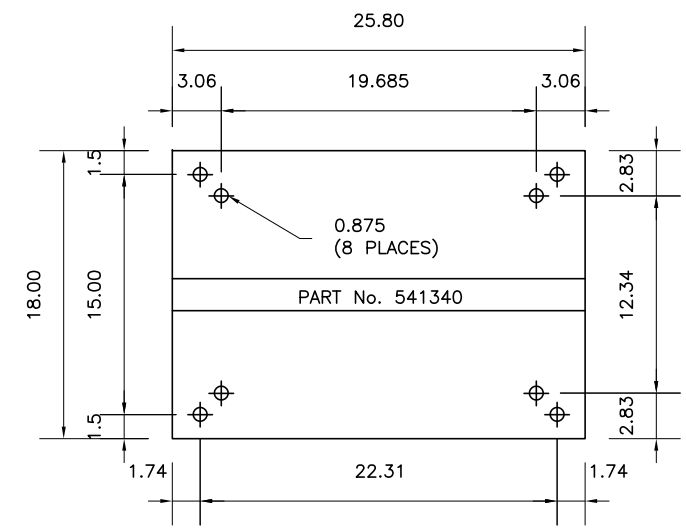
NetSure™ 7100 with -58VDC Converters

- NEQ.53545 (Vertiv p/n 582127000503) w/3 Battery Trays with 200A CBs
- NEQ.53546 (Vertiv p/n 582127000500) w/o Battery Trays
- -48VDC at 958A plus redundancy (rectifiers)
 - Expandable to 1458A plus redundancy
- -58VDC at 221A average, 276A peak plus redundancy (converters)
 - Expandable to 386A average, 483A peak plus redundancy
- 2000W (41.7A) rectifiers and 2000W (34.5A) peak/1600W (27.6A) average DC to DC converters
 - Interchangeable in certain slots
- DC Distribution – 78 Bullet positions
 - 6-Position GMT fuse module occupying two bullet positions
- Three battery temperature probes
- 7 Foot Seismic Zone-4 Relay Rack
- AT&T Mobility Standard Controller Configuration
- True front access – installation, operation, maintenance



Confidential. Property of Vertiv 5

2 VERTIV NETSURE 7100 WITH -58VDC CONVERTERS
SCALE: N.T.S.



3 VERTIV 7100 RACK MOUNTING DIMENSIONS
SCALE: 1"=1'-0"

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AT&T MOBILITY
VERTIV NETSURE 7100 PP SPECIFICATIONS
DRAWING NUMBER: IL0776-A02
REV: G

SDC030 | 2.2L | 30 kW
INDUSTRIAL DIESEL GENERATOR SET

EPA Certified Stationary Emergency



Standby Power Rating
 30 kW, 38 kVA, 60 Hz



Image used for illustration purposes only



*EPA Certified Prime ratings are not available in the US or its Territories

STANDARD FEATURES

ENGINE SYSTEM

- Oil Drain Extension
- Air Cleaner
- Stainless Steel Flexible Exhaust Connection
- Engine Coolant Heater
- Factory Filled Oil and Coolant

FUEL SYSTEM

- Fuel Lockoff Solenoid
- Primary Fuel Filter

COOLING SYSTEM

- Closed Coolant Recovery System
- UV/Ozone Resistant Hoses
- Factory-Installed Radiator
- Radiator Drain Extension
- 50/50 Ethylene Glycol Antifreeze

ELECTRICAL SYSTEM

- Battery Charging Alternator
- Battery Cables
- Battery Tray
- Rubber-Booted Engine Electrical Connections
- Solenoid Activated Starter Motor
- 5A Battery Charger

ALTERNATOR SYSTEM

- UL2200 GENprotect™
- Class H Insulation Material
- 2/3 Pitch
- Skewed Stator
- Permanent Magnet Excitation
- Sealed Bearing
- Rotor Dynamically Spin Balanced
- Amortisseur Winding (3-Phase Only)
- Full Load Capacity Alternator
- Protective Thermal Switch

GENERATOR SET

- Internal Genset Vibration Isolation
- Separation of Circuits - High/Low Voltage
- Wrapped Exhaust Piping
- Standard Factory Testing
- 2 Year Limited Warranty (Standby Rated Units)
- Silencer Mounted in the Discharge Hood

ENCLOSURE

- Aluminum Enclosure
- Rust-Proof Fasteners with Nylon Washers to Protect Finish
- High Performance Sound-Absorbing Material
- Gasketed Doors
- Twist-Lock Handle
- RhinoCoat™ - Textured Polyester Powder Coat Paint
- Up to 70 lbs/ft² Snow Load Rating
- Up to 200 MPH Wind Load Rating

FUEL TANKS (If Selected)

- UL 142/ULC S601
- Double Wall
- Normal and Emergency Vents
- Factory Pressure Tested
- Rupture Basin Alarm
- Fuel Level
- Check Valve In Supply and Return Lines
- RhinoCoat™ - Textured Polyester Powder Coat Paint
- Stainless Steel Hardware

CONFIGURABLE OPTIONS

ENGINE SYSTEM

- Oil Heater
- Two-Stage Air Cleaner
- Level 1 Fan and Belt Guard

FUEL SYSTEM

- NPT Flexible Fuel Line

ELECTRICAL SYSTEM

- 10A UL Listed Battery Charger
- Battery Warmer

ALTERNATOR SYSTEM

- Anti-Condensation Heater
- Tropical Coating

GENERATOR SET

- Extended Factory Testing
- Pad Vibration Isolators

ENCLOSURE

- AC/DC Enclosure Light
- Door Open Alarm Horn

WARRANTY (Standby Gensets Only)

- 2 Year Extended Limited Warranty
- 5 Year Limited Warranty
- 5 Year Extended Limited Warranty
- 7 Year Extended Limited Warranty
- 10 Year Extended Limited Warranty

CONTROL SYSTEM

- NFPA 110 Compliant 21-Light Remote Annunciator
- Remote Relay Assembly (8 or 16)
- Battery Disconnect Switch
- Remote E-Stop (Break Glass-Type, Surface Mount)
- Remote E-Stop (Red Mushroom-Type, Surface Mount)
- Remote E-Stop (Red Mushroom-Type, Flush Mount)
- 100 dB Alarm Horn
- Ground Fault Annunciator
- 120V GFCI and 240V Outlets
- 10A Engine Run Relay

FUEL TANKS (Size On Last Page)

- Overfill Protection Valve
- Spill Box Return Hose
- 2.5 Gallon Spill Box
- Tank Risers
- Fuel Level Switch and Alarm
- 12" Vent System
- Fire Rated Stainless Steel Fuel Hose
- Fuel Drop Hose

ENGINEERED OPTIONS

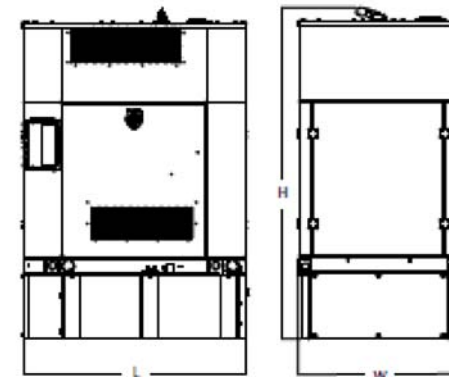
GENERATOR SET

- Special Testing

FUEL TANKS

- UL2085 Tank
- Stainless Steel Tanks
- Special Fuel Tanks
- Fluid Containment Pan

DIMENSIONS AND WEIGHTS*

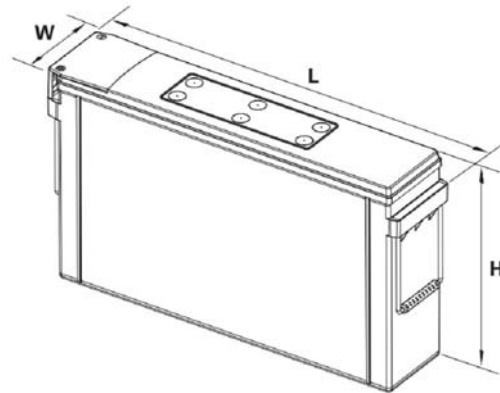


COMPACT VARIANT

Run Time - Hours	Usable Capacity - Gal (L)	L x W x H - in (mm)	Weight - lbs (kg)
No Tank	-	60.7 (1,542) x 34.0 (863) x 72.2 (1,834)	1,623 (736)
18	50 (189)	60.7 (1,542) x 32.9 (836) x 89.7 (2,233)	2,168 (983)
53	145 (549)	60.7 (1,542) x 32.9 (836) x 109.2 (2,774)	2,440 (1,107)

① **GENERAC SDC030 DIESEL GENERATOR SPECIFICATIONS**

 1890 SUNCAST LANE BATAVIA, IL 60510	 Apex Engineers, Inc. Structural & Civil Engineers 500 East 22nd Street, Suite B Lombard, Illinois 60148 Ph. (630) 627-1800 Fax. (630) 627-1165 APEX JOB No. NS22-069	IL0776 SITE NO. IL0776 1301 CLYDE DRIVE NAPERVILLE, IL 60565		<table border="1" style="font-size: 8px; border-collapse: collapse;"> <tr> <td>G</td><td>03/06/26</td><td>FINAL CDs REVISED NEW GENERATOR MODEL</td><td>PB</td><td>RG</td><td>RG</td></tr> <tr> <td>F</td><td>01/30/26</td><td>FINAL CDs REVISED PER CITY COMMENTS</td><td>PB</td><td>RG</td><td>RG</td></tr> <tr> <td>E</td><td>01/08/26</td><td>FINAL CDs REVISED PER CITY COMMENTS</td><td>PB</td><td>RG</td><td>RG</td></tr> <tr> <td>D</td><td>11/11/25</td><td>FINAL CDs ISSUED FOR CONSTRUCTION</td><td>PB</td><td>RG</td><td>RG</td></tr> <tr> <td>C</td><td>06/24/25</td><td>90% CDs ISSUED FOR REVIEW</td><td>PB</td><td>RG</td><td>RG</td></tr> <tr> <td>NO.</td><td>DATE</td><td>REVISIONS</td><td>BY</td><td>CHK</td><td>APP'D</td></tr> </table> SCALE: AS SHOWN DESIGNED BY: DRAWN BY:	G	03/06/26	FINAL CDs REVISED NEW GENERATOR MODEL	PB	RG	RG	F	01/30/26	FINAL CDs REVISED PER CITY COMMENTS	PB	RG	RG	E	01/08/26	FINAL CDs REVISED PER CITY COMMENTS	PB	RG	RG	D	11/11/25	FINAL CDs ISSUED FOR CONSTRUCTION	PB	RG	RG	C	06/24/25	90% CDs ISSUED FOR REVIEW	PB	RG	RG	NO.	DATE	REVISIONS	BY	CHK	APP'D	AT&T MOBILITY GENERAC SDC030 DIESEL GENERATOR SPECIFICATIONS DRAWING NUMBER: IL0776-A03 REV: G
G	03/06/26	FINAL CDs REVISED NEW GENERATOR MODEL	PB	RG	RG																																				
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NO.	DATE	REVISIONS	BY	CHK	APP'D																																				



POWERSAFE SBS 190F SPECIFICATIONS
6 CELL, 12 VOLT,
M6 M FRONT TERMINAL 190 AH



DIMENSIONS:

- Length: 22.1 in, 561 mm
- Width: 4.90 in, 125 mm
- Height: 12.4 in, 316 mm
- Weight: 132 lbs, 60.0 kg

NOMINAL CAPACITY:

- 8hr rate 1.75Vpc @ 77°F: 190
- 10hr rate 1.80Vpc @ 20°C: 190

1 POWERSAFE SBS190F BATTERY SPECIFICATIONS
SCALE: N.T.S.

**DC SURGE PROTECTION SOLUTIONS FOR BASE STATION –
OUTDOOR RATED DC50-48-60-96-50F
ELECTRICAL DISTRIBUTION PLUS DISCRETE CIRCUIT SURGE
PROTECTION & FIBER MANAGEMENT JUNCTION BOX**



FIBER CABLES CONNECTION METHOD:
DUPLEX LC ADAPTERS
OPERATING TEMPERATURE:
-40° C TO +55° C
STORAGE TEMPERATURE:
-40° C TO +85° C
ENCLOSURE MATERIAL: ALUMINUM
ENCLOSURE DIMENSIONS (W X H X D):
40" X 52.24" X 9"
WEIGHT: 165 LBS
CONDUIT FITTINGS:
3- 2" CONDUIT FITTINGS,
2- 2½" CONDUIT FITTINGS,
1- 1" CONDUIT FITTING
CABLE GLANDS (KIT INCLUDED):
VARIOUS CABLE GLANDS

2 DC50-48-60-96-50F
SCALE: N.T.S.

ERICSSON ROUTER 6672:



TECHNICAL SPECIFICATION FOR ROUTER 6672

MECHANICAL

SYSTEM WEIGHT: 6KG / 13.2LBS
DIMENSION (H X W X D): 1RU 43.6MM X 442.4MM X 250MM
AIR FLOW: FILTER-LESS DESIGN, FRONT TO BACK WITH FIELD SWAPPABLE FAN TRAY

ELECTRICAL

POWER SUPPLY DC: -48 V, DUAL FEED
POWER SUPPLY AC: 100-240 V, SINGLE FEED
POWER CONSUMPTION: TYPICAL 110 WATTS, MAX 165 WATTS

ENVIRONMENTAL

OPERATING TEMPERATURE: -40°C TO 65°C
RELATIVE HUMIDITY: 5 - 95% NON-CONDENSING
GR-3108-CORE CLASS 1: CONTROLLED PROTECTED ENVIRONMENTS
GR-3108-CORE CLASS 2: PROTECTED EQUIPMENT IN OUTSIDE ENVIRONMENTS
EN 300 019-1-3 CLASS 3.3: NOT TEMPERATURE-CONTROLLED LOCATIONS

3 ERICSSON ROUTER 6672
SCALE: N.T.S.



CONVERTER, -48 VDC TO -58 VDC, 2000 W PEAK / 1600 W
PART NUMBER 1C48582000P3

DC INPUT C48/58-2000P3
VOLTAGE 41 VDC TO 58.5 VDC, 48 VDC (NOMINAL)
MAXIMUM CURRENT 53 A

DC OUTPUT VOLTAGE 56 VDC TO 58 VDC
MAXIMUM POWER 2000 W PEAK, 1600 W AVERAGE
AT 40°C, 1280 W AVERAGE AT 65°C
MAXIMUM CURRENT 35.7 A AT 2000 W PEAK (SEE FIGURE 1),
28.6 A AT 1600 W AVERAGE, 22.9 A AT 1280
W AVERAGE, ALL AT 56 VDC

PEAK EFFICIENCY >95%
NOISE < 250MV PK-PK; < 20MV RMS; < 38 DBRNC

MECHANICS
DIMENSIONS (HxWxD) 41 X 84.5 X 252.5 MM /
1.61 X 3.33 X 9.94 INCHES
WEIGHT 1.13 KG / 2.49 LBS

4 VERTIV E-SURE CONVERTER
-48 VDC TO -58 VDC



VERTIV RECTIFIER, -48 VDC, 2000 W, 1R482000E3

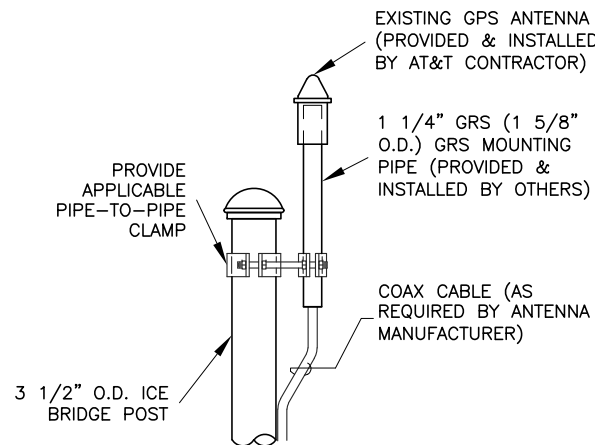
AC INPUT R48-2000E3
VOLTAGE 85 VAC TO 300 VAC,
187 VAC TO 264 VAC (NOMINAL)
FREQUENCY 45 HZ TO 65 HZ
MAXIMUM CURRENT 12 A
POWER FACTOR >0.99 FROM 50 TO 100% LOAD
PROTECTION HIGH AND LOW VOLTAGE PROTECTION, SURGE
AND LIGHTNING PROTECTION ADAPTS TO POOR QUALITY
GRID (VOLTAGE DIP, WEAK MAINS) DISCONNECTION AT
415 VAC MAINS FUSES IN BOTH LINES

DC OUTPUT VOLTAGE -42 VDC TO -58 VDC
MAXIMUM POWER 2000 W
MAXIMUM CURRENT 42 A @ -48 VDC, LIMIT SET POINT 0 TO 42 A
PEAK EFFICIENCY 96.2%
PROTECTION FUSE FOR REVERSE CONNECTION AND BACK FEEDING
PROTECTION HIGH VOLTAGE SHUTDOWN HIGH
TEMPERATURE PROTECTION
DERATING FULL OUTPUT POWER UP TO +65°C AT
INPUT VOLTAGE RANGE 200 TO 250 VAC

TEMPERATURE

MECHANICS
DIMENSIONS (HxWxD) 41x84.5x252.5 mm / 1.61x3.33x9.94 inches
WEIGHT 1.13 kg / 2.49 lbs

5 VERTIV RECTIFIER - 1R482000E3
SCALE: N.T.S.



6 GPS ANTENNA MOUNTING DETAIL
SCALE: N.T.S.



ERICSSON - BASEBAND UNIT 6651

A - 19-INCH BASEBAND UNIT
B - FAN MODULE
C - MOVABLE BRACKETS
DIMENSIONS (HxDxW): 1.8"x15.4"x19"
WEIGHT (UNIT ONLY): 17.6 LBS

7 BASEBAND 6651
SPECIFICATION



1890 SUNCAST LANE
BATAVIA, IL 60510



Apex Engineers, Inc.
Structural & Civil Engineers
500 East 22nd Street, Suite B
Lombard, Illinois 60148
Ph. (630) 627-1800
Fax. (630) 627-1165

APEX JOB No. NS22-069

IL0776

SITE NO. IL0776

1301 CLYDE DRIVE
NAPERVILLE, IL 60565



G	03/06/26	FINAL CDs REVISED NEW GENERATOR MODEL	PB	RG	RG
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NO.	DATE	REVISIONS	BY	CHK	APP'D
SCALE: AS SHOWN		DESIGNED BY:	DRAWN BY:		

AT&T MOBILITY

EQUIPMENT SPECIFICATIONS - 1

DRAWING NUMBER

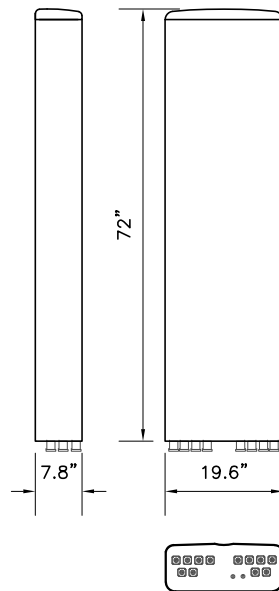
IL0776-A04

REV

G

COMMSCOPE ANTENNAS NNH4-65B-R6H4

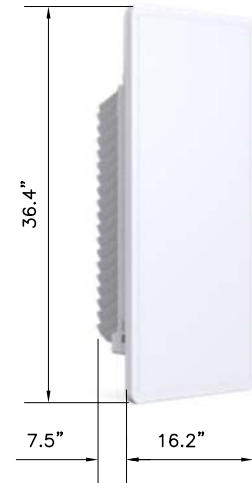
DIMENSIONS, HXWXD: 72"X19.6"X7.8"
 WIND SPEED, MAXIMUM: 150 mph (241.4 km/h)
 WEIGHT, WITHOUT MOUNTING: 74.957 LBS. (34 kg)
 CONNECTOR: FEMALE 8-PIN DIN
 MALE 8-PIN DIN
 CONNECTOR POSITION: BOTTOM
 CONNECTOR QTY. TOTAL: 12
 MOUNTING POLE: 2.4"-4.5"
 MOUNTING BRACKET: BSAMNT-2F



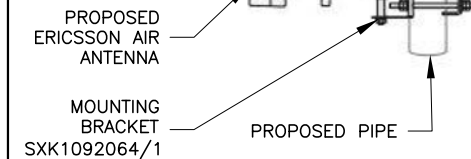
1 COMMSCOPE - NNH4-65B-R6H4
 SCALE: N.T.S.

AIR 6472 B77G B77M, WIDE BAND ANTENNA

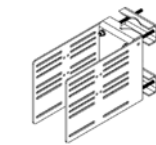
DIMENSIONS, HXWXD: ~36.4"X16.2"X7.5"
 WEIGHT, WITHOUT MOUNTING: ~42 KG
 TRX BRANCHES: 64T64R
 ANTENNA ELEMENTS: 256
 OPERATION BAND: B77G (3450-3550 MHz) + B77M (3840-3980 MHz)
 IBW: 530 MHz
 TCBW: MAX 200 MHz
 OUTPUT POWER: 400 W (CONFIGURABLE FOR TWO BANDS IN TOTAL, 4W/MHZ PSD)
 EIRP: 80.8 dBm (SAME EIRP AS FROM 480W WITH 192AE)
 eCPRI LINK: 2*25G
 OPERATING TEMPERATURE: -40 TO +55°C
 POWER SUPPLY: -48VDC 3-WIRES, SINGLE CONNECTOR
 POWER CONSUMPTION: ~700W, ETSI AVG.
 MULTI-LAYER MU MIMO: 16/8 DL/UL LAYER



2 AIR 6472 B77G B77M ANTENNA
 SCALE: N.T.S.



3 AIR ANTENNA MOUNTING DETAIL
 SCALE: N.T.S.



ROSENBERGER D200RRU

RRUS BRACKET ROSENBERGER D200RRU	
DIMENSIONS (HxWxL)	12.81"x8"x18"
WEIGHT	37.98 lb
MOUNTING DIAMETER, MAXIMUM	5"
MOUNTING DIAMETER, MINIMUM	1/2"

ROSENBERGER D200RRU - LOW PIM 7 SLOTTED RRU MOUNT, UNIVERSAL

- FITS ROUND LEGS: 1/2" TO 5"
 60 DEG ANGLE LEGS 1" TO 5"
 90 DEG ANGLE LEGS 1" TO 3 1/2"
- THIS MOUNT IS STRUCTURALLY ADEQUATE TO SUPPORT (2) 38"H x 18"W x 11"D RADIOS (120LBS. EACH) CENTERED BETWEEN SLOTS AT AN ELEVATION OF 200' ABOVE GRADE, WITH STRUCTURE CLASS II, EXPOSURE CATEGORY C, TOPOGRAPHIC CATEGORY 1, AND A BASIC WIND SPEED OF 150 MPH (194 MPH ULTIMATE) PER ANSI/TIA-222-G.

4 RRUS BRACKET SPECIFICATION
 SCALE: N.T.S.

RADIO 4490 B5/B12A

SPECIFICATION:
 - 4 COMMON RF PORTS
 - B5: 4X60W
 - B12A: 4X60W
 - 480W TOTAL WITHOUT FAN (-40 TO +55 °C)
 - L (≥5MHZ), NR, ESS, NB-IOT (IB AND GB)
 - 2X 2.5/4.9/9.8/10.1/24.3 GBPS CPRI
 - eCPRI
 - FRONT AREA: 384MM X 444MM (15.1X17.5 INCHES)
 - DEPTH: 172MM (6.8 INCHES) -> 29.3 LITER
 - 31KG (68 LBS)
 - INTERNAL PIMC*
 - IMPROVED ENERGY EFFICIENCY
 - AISG TMA & RET SUPPORT VIA RS-485 OR RF CONNECTORS
 - 2 EXTERNAL ALARM
 - CONVECTIONAL COOLING
 - OPTIONAL FAN FOR INCREASED SITE FLEXIBILITY
 - IP 65, -40 TO +55 °C



5 ERICSSON RRUS 4490 B5/B12A
 SCALE: N.T.S.

RADIO 4494 B14/B29

SPECIFICATION:
 - DUAL BAND 4T4R/2T
 - PA POWER:
 B14: 4x40W
 B29: 2x40W
 - B14: L5, L10, N5, N10, ESS10, NB-IoT(IB, GB & SA)
 - B29: L3, L5, L10
 - CPRI 2x2.5/4.9/9.8/10.1/24.3 GBPS
 - eCPRI 2x10.3/25.8 GBPS
 - FRONT AREA: 384MM X 444MM (15.1X17.5 INCHES)
 - DEPTH: 143MM (5.6 INCHES); (24.0 LITER)
 - WEIGHT: 26KG
 - -48 VDC 3-WIRE OR 2-WIRE (SINGLE DC-CONNECTOR)
 - AISG TMA & RET SUPPORT VIA RS-485 OR RF CONNECTORS
 - 2 EXTERNAL ALARM
 - OPTIONAL FAN FOR INCREASED SITE FLEXIBILITY
 - IP 65, -40° C TO +55° C
 - POWER CONSUMPTION: 15% REDUCTION COMPARED TO 4478B14 + 2012 B29 FOR THE SAME CONFIGURATION.



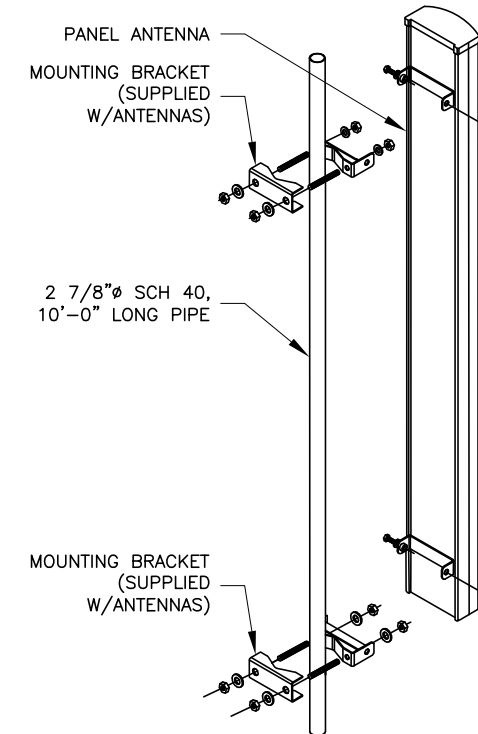
6 ERICSSON RRUS 4494 B14/B29
 SCALE: N.T.S.

RADIO 4890 B25/B66

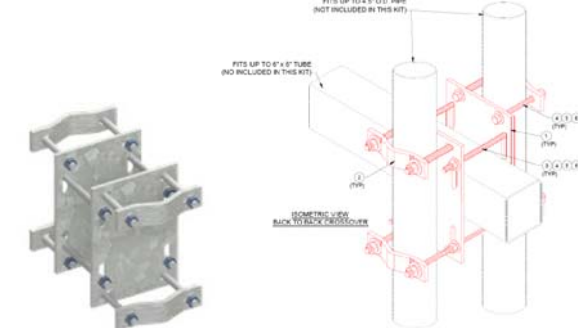
SPECIFICATION:
 - PORTS, 4T8R PER BAND
 - B2/B25: 4X60W
 - B66: 4X60W
 - UP TO 480W IN TOTAL WITHOUT FAN (-40 TO +55 °C)
 - L (≥5MHZ), NR, ESS, NB-IOT (IB AND GB)
 - 2X 2.5/4.9/9.8/10.1/24.3 GBPS CPRI
 - eCPRI
 - FRONT AREA: 384MM X 444MM (15.1X17.5 INCHES)
 - DEPTH: 176MM (6.9 INCHES) -> 30.0 LITER (ESTIMATE)
 - DUAL LAYER FILTER, ONE LAYER RX-ONLY
 - 31KG (68 LBS)
 - INTERNAL PIMC*
 - -48 VDC 3-WIRE OR 2-WIRE (SINGLE DC-CONNECTOR)
 - IMPROVED ENERGY EFFICIENCY
 - AISG TMA & RET SUPPORT VIA RS-485 OR RF CONNECTORS
 - 2 EXTERNAL ALARM
 - CONVECTIONAL COOLING
 - OPTIONAL FAN FOR INCREASED SITE FLEXIBILITY
 - IP 65, -40 TO +55 °C



7 ERICSSON RRUS 4890 B25/B66
 SCALE: N.T.S.



8 PANEL ANTENNA MOUNTING DETAIL
 SCALE: N.T.S.



BACK-TO-BACK CROSSOVER PLATE, BETTER METAL PART #1BXP-M06

- INCLUDES (2) 3/8" THICK PLATES, (8) 2" TALL SADDLE CLAMPS & (12) 5/8" DIAMETER THREADED ROD ASSEMBLIES.
- FITS UP TO 6" X 6" TUBE (STABILIZER ARMS/OUTRIGGERS).
- FITS 1-1/2" OD UP TO 4-1/2" OD VERTICAL PIPE.
- NEITHER PIPE NOR TUBE INCLUDED, BUT AVAILABLE FOR PURCHASE SEPARATELY.
- HOT DIP GALVANIZED STEEL

9 BETTER METAL PART #1BXP-M06
 SCALE: N.T.S.

MasTec
 Network Solutions
 1890 SUNCAST LANE
 BATAVIA, IL 60510

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 Structural & Civil Engineers
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 Lombard, Illinois 60148
 Ph. (630) 627-1800
 Fax. (630) 627-1165
 APEX JOB No. NS22-069

IL0776

SITE NO. IL0776
 1301 CLYDE DRIVE
 NAPERVILLE, IL 60565



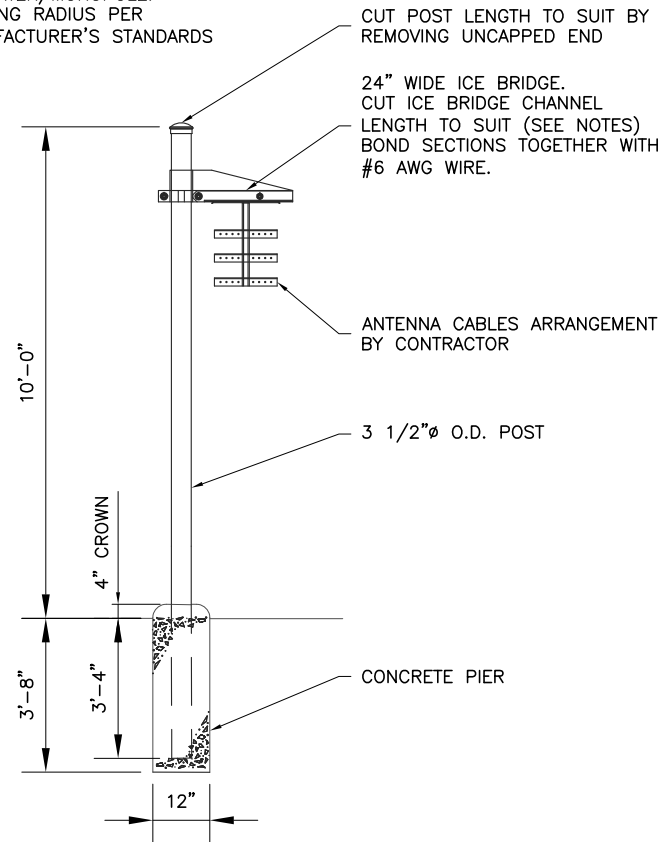
G	03/06/26	FINAL CDs REVISED NEW GENERATOR MODEL	PB	RG	RG
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NO.	DATE	REVISIONS	BY	CHK	APP'D
SCALE: AS SHOWN		DESIGNED BY:	DRAWN BY:		

AT&T MOBILITY

EQUIPMENT SPECIFICATIONS - 2

DRAWING NUMBER		REV
IL0776- A05		G

* INSTALL DRIP LOOP ON ANTENNA CABLES AT BOTTOM OF TOWER/MONOPOLE. BENDING RADIUS PER MANUFACTURER'S STANDARDS



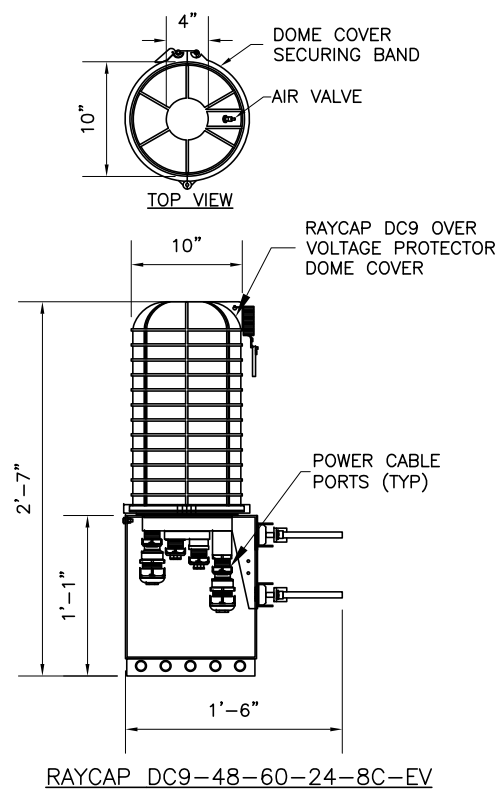
COMMSCOPE WB-K210-B
12" WIDE X 10' LONG ICE BRIDGE
LENGTH: 120 IN. HEIGHT: 160 IN.;
WIDTH: 24 IN.; PIPE LENGTH: 159.6 IN.

NOTES:

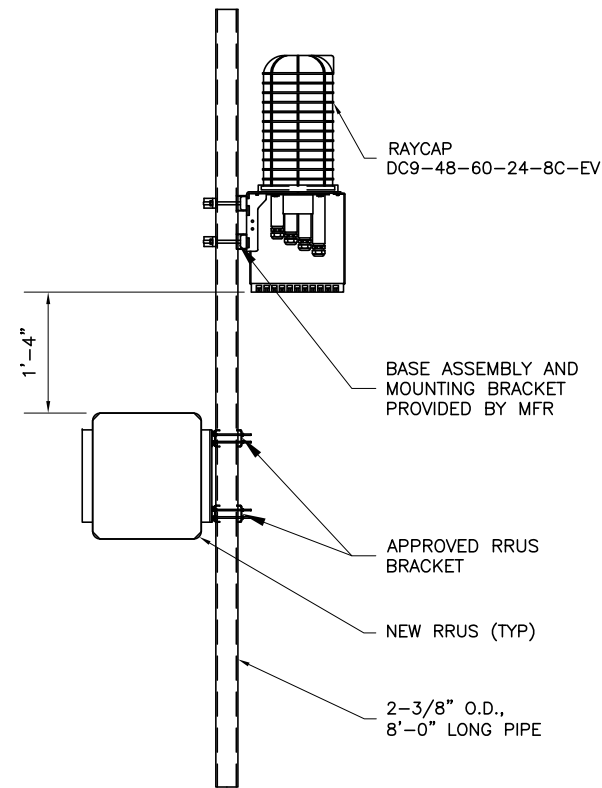
1. WHEN USING COMPONENTS AS SHOWN IN STANDARD DETAILS, MAXIMUM ALLOWABLE SPAN BETWEEN SUPPORTS ON A CONTINUOUS SINGLE SECTION OF BRIDGE CHANNEL SHALL BE 9 FEET FOR 10 FEET BRIDGE CHANNEL.
2. WHEN USING COMPONENTS FOR SPLICING BRIDGE CHANNEL SECTIONS, THE SPLICE SHOULD BE PROVIDED AT THE SUPPORT, IF POSSIBLE, OR AT A MAXIMUM OF 2 FEET FROM THE SUPPORT.
3. WHEN USING COMPONENTS, SUPPORT SHOULD BE PROVIDED AS CLOSE AS POSSIBLE TO THE ENDS OF ICE BRIDGES, WITH A MAXIMUM CANTILEVER DISTANCE OF 2 FEET FROM THE SUPPORT TO THE FREE END OF THE ICE BRIDGE.
4. CUT BRIDGE CHANNEL SECTIONS SHALL HAVE RAW EDGES TREATED WITH A MATERIAL TO RESTORE THESE EDGES TO THE ORIGINAL CHANNEL, OR EQUIVALENT, FINISH.
5. ICE BRIDGES MAY BE CONSTRUCTED WITH COMPONENTS FROM OTHER MANUFACTURERS, PROVIDED THE MANUFACTURER'S INSTALLATION GUIDELINES ARE FOLLOWED.
6. DEVIATIONS FROM STANDARDS FOR COMPONENT INSTALLATIONS ARE PERMITTED WITH THE RESPECTIVE MANUFACTURER'S APPROVAL.
7. DEVIATIONS FROM ICE BRIDGE FOUNDATIONS REQUIRE ENGINEERING APPROVAL.

ICE BRIDGE COMMSCOPE
PART # WB-K210-B

1 SCALE: N.T.S.



2 RAYCAP DC9-48-60-24-8C-EV
SCALE: NTS



3 RRUS/ DC9 MOUNTING DETAIL

HOT-DIP GALVANIZED PIPE - BETTER METAL

1BPP-238126 - 2 3/8" O.D. x 126" LONG PIPE, WEIGHT, 40.46 LB

1BPP-238150 - 2 3/8" O.D. x 150" LONG PIPE

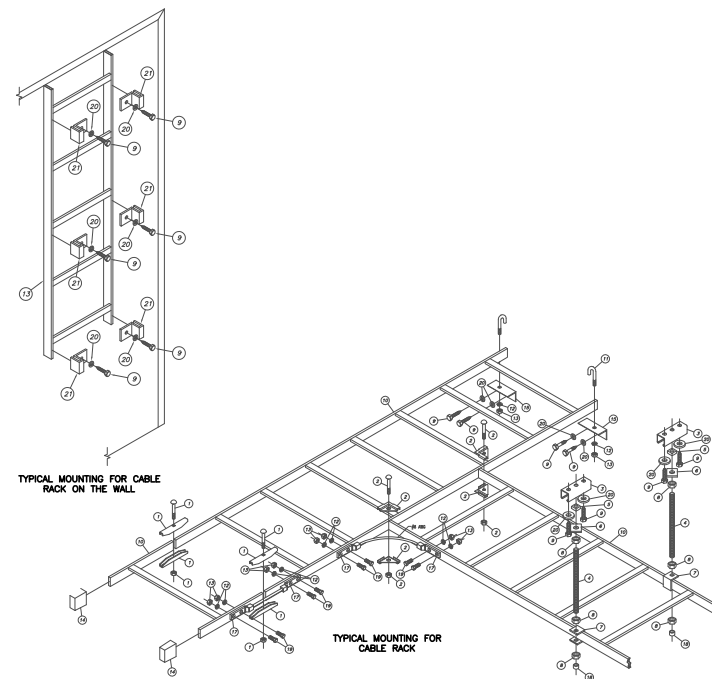
1BPP-278126 - 2 3/8" O.D. x 126" LONG PIPE, WEIGHT, 60.83 LB

SCHEDULE: 40

MATERIAL TYPE HOT DIP GALVANIZED STEEL

CUT PIPES TO REQUIRED LENGTH

4 HOT-DIP GALVANIZED PIPE BETTER METAL



5 CABLE TRAY DETAILS
SCALE: NTS

MATERIAL LIST		
NO	DESCRIPTION	PART NO
1	SPLICE CLAMP	
	BOLT	11188.1
	NUT	
2	CORNER CLAMP	11189.1
	BOLT	
3	4 1/2" KINDORF CHANNEL	194244
4	5/8" - 11 THREADED ROD	11635
5	SQUARE NUT - 5/8"	10205
6	SQUARE WASHER	11519
7	BRACKET	11178
8	NUT	11184
9	TAP CON	12910
10	* 18" Z/C "STANDARD" *	194715
11	J-BOLT	11175
12	LOCK WASHER	11507
13	NUT	11470
14	END CAPS	22705
15	1 3/4" x 1 3/4" x 1/8" x 4" ANGLE	192777
16	** 15" UNISTRUT **	194335
17	2-HOLE LUG W/ #6 WIRE	21023
18	PLASTIC PROTECTION CAP	22061
19	1/4" X 1" BOLT	11477
20	1/4" X 1" FENDER FLAT WASHER	11513
21	BRACKET, WALL CLIP- 7/16" HOLE	11963

NOTES:

1. ALL CABLE TRAY MEASUREMENTS ARE ACCURATE WITHIN ; 1/4".
 2. BOTTOM OF CABLE RACK TO BE MOUNTED 7'-0" A.F.F.
 3. ALL DETAILS MAY NOT APPLY TO CABLE RACK LAYOUT.
 4. CABLE TRAY CORNER CLAMPS SHALL BE INSTALLED AS SHOWN. CORNER CLAMPS MAY BE MOVED TO OPPOSITE SIDE IF NEEDED DUE TO OBSTRUCTIONS.
 5. UNISTRUT MEASUREMENTS ARE ACCURATE WITHIN ;2" WHEN MOVEMENT IS REQUIRED TO MISS TRIM, CABLE TRAY RUNGS, CONCRETE RIBS IN WRONG LOCATION, ETC. CONSIDERATION OF THE PREVIOUS UNISTRUT MOVEMENT SHOULD BE TAKEN INTO ACCOUNT.
 6. UNISTRUTS MAY HAVE THEIR MEASUREMENT VARIED BY 24" WITH NO MORE THAN 72" BETWEEN UNISTRUTS. PARAMETERS FOR MOVING THE UNISTRUT ARE AS FOLLOWS: LIGHTS, CONDUIT, ELECTRICAL BOXES, RACEWAYS AND VARIOUS EQUIPMENT MOUNTED ON CABLE RACK THAT ARE IN THE WAY. INCOMPATIBLE PRINT LAYOUTS ARE ALSO A PARAMETER FOR MOVEMENT.
 7. CABLE TRAY MAY BE MOVED ;3" WHEN AND ONLY WHEN ITEMS ALREADY MOUNTED, SUCH AS CONDUIT, BOXES, LIGHTS, WIREWAY, ETC., INTERFERE WITH THE MEASUREMENT ON THE PRINT.
 8. WHEN THE UNISTRUT FOR THE CABLE TRAY IS NOT ON CONCRETE, A #12 WOOD SCREW CAN BE USED TO FASTEN THE UNISTRUT TO THE CEILING USING EVERY OTHER HOLE IN THE UNISTRUT. THE 4 1/2" UNISTRUT MUST BE ON CONCRETE AND MUST BE FASTENED WITH TAPCONS.
 9. THE POSITIONS FOR THE CABLE TRAY SPLICERS THAT ARE SHOWN ON THE PRINT ARE FOR ILLUSTRATION. THE BEST POSITION SHOULD BE DETERMINED WHEN LAYING OUT THE CABLE TRAY IN THE BUILDING TO GET THE OPTIMUM USE OF THE CABLE TRAY.
- (*) 18" Z/C "STANDARD" - #194715
(*) 24" Z/C "STANDARD" - #194716
(**) 21" UNISTRUT - #194336
(**) 27" UNISTRUT - #194337
(**) 30" UNISTRUT - #194869

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APEX JOB No. NS22-069

IL0776

SITE NO. IL0776
1301 CLYDE DRIVE
NAPERVILLE, IL 60565



G	03/06/26	FINAL CDs REVISED NEW GENERATOR MODEL	PB	RG	RG
F	01/30/26	FINAL CDs REVISED PER CITY COMMENTS	PB	RG	RG
E	01/08/26	FINAL CDs REVISED PER CITY COMMENTS	PB	RG	RG
D	11/11/25	FINAL CDs ISSUED FOR CONSTRUCTION	PB	RG	RG
C	06/24/25	90% CDs ISSUED FOR REVIEW	PB	RG	RG
NO.	DATE	REVISIONS	BY	CHK	APP'D
SCALE: AS SHOWN		DESIGNED BY:	DRAWN BY:		

AT&T MOBILITY

EQUIPMENT SPECIFICATIONS - 3

DRAWING NUMBER
IL0776-A06

SECTOR	ANTENNA NUMBER	POLARITY/PORT	ANTENNA MODEL NUMBER	ANTENNA VENDOR	TMA/ RRU MODEL NUMBER	AZIMUTH	ANTENNA CENTERLINE FROM GROUND	ANTENNA TIP HEIGHT	ANTENNA TYPE	DC SURGE AND DISTRIBUTION	COAX/ FIBER/ DC POWER CABLES		
											COAX CABLE	OTHER CABLES	LENGTH
A	A1	700	NNH4-65B-R6H4	COMMSCOPE	(1) RRUS 4490 B5/B12A	30°	190'-0"	193'-0"	LTE 700	(3) RAYCAP DC9-48-60-24-8C-EV	NONE	(6) #6AWG DC POWER CABLES (2) 24 PAIRS FIBER CABLES	±240'-0"
		5G 850							5G 850				
	A2	5G DOD	AIR 6472 B77G B77M	ERICSSON	INTEGRATED WITHIN ANTENNA	30°	190'-0"	191'-6"	5G DoD				
		5G C-BAND							5G CBAND				
	A3	FNET 700	NNH4-65B-R6H4	COMMSCOPE	(1) RRUS 4494 B14/B29	30°	190'-0"	193'-0"	FNET 700				
		1900							LTE/5G 1900				
		AWS							LTE/5G AWS				
	A4												
B	B1	700	NNH4-65B-R6H4	COMMSCOPE	(1) RRUS 4490 B5/B12A	150°	190'-0"	193'-0"	LTE 700	(3) RAYCAP DC9-48-60-24-8C-EV	NONE	(6) #6AWG DC POWER CABLES (2) 24 PAIRS FIBER CABLES	±240'-0"
		5G 850							5G 850				
	B2	5G DOD	AIR 6472 B77G B77M	ERICSSON	INTEGRATED WITHIN ANTENNA	150°	190'-0"	191'-6"	5G DoD				
		5G C-BAND							5G CBAND				
	B3	FNET 700	NNH4-65B-R6H4	COMMSCOPE	(1) RRUS 4494 B14/B29	150°	190'-0"	193'-0"	FNET 700				
		1900							LTE/5G 1900				
		AWS							LTE/5G AWS				
	B4												
C	C1	700	NNH4-65B-R6H4	COMMSCOPE	(1) RRUS 4490 B5/B12A	270°	190'-0"	193'-0"	LTE 700	(3) RAYCAP DC9-48-60-24-8C-EV	NONE	(6) #6AWG DC POWER CABLES (2) 24 PAIRS FIBER CABLES	±240'-0"
		5G 850							5G 850				
	C2	5G DOD	AIR 6472 B77G B77M	ERICSSON	INTEGRATED WITHIN ANTENNA	270°	190'-0"	191'-6"	5G DoD				
		5G C-BAND							5G CBAND				
	C3	FNET 700	NNH4-65B-R6H4	COMMSCOPE	(1) RRUS 4494 B14/B29	270°	190'-0"	193'-0"	FNET 700				
		1900							LTE/5G 1900				
		AWS							LTE/5G AWS				
	C4												

THIS ANTENNA MATRIX TABLE IS PREPARED BASED ON RFDS
DATED 04/29/2025 REVISION # V1.0
GENERAL CONTRACTOR TO VERIFY AND INCORPORATE MOST
RECENT VERSION OF RFDS PRIOR TO CONSTRUCTION.

1 ANTENNA MATRIX
NTS

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SCALE: AS SHOWN		DESIGNED BY:	DRAWN BY:		

AT&T MOBILITY

ANTENNA MATRIX

DRAWING NUMBER
IL0776- A07

6

5

4

3

2

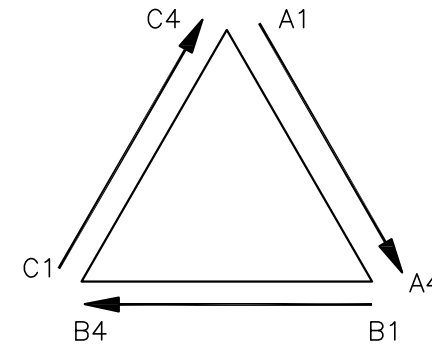
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11 x 17" B SIZE

CABLE MARKING COLOR CONVENTION TABLE

ALPHA, A, X, #1	A1-1 +45	A1-2 -45	A2-1 +45	A2-2 -45	A3-1 +45	A3-2 -45	A4-1 +45	A4-2 -45
SECTOR ANTENNA PORT (+/-)	RED	RED	RED	RED	RED	RED	RED	RED
BAND (LOW/HI) *SEE NOTES 13 AND 15	WHITE	WHITE	ORANGE	ORANGE	BROWN	BROWN	VIOLET	VIOLET
BEAM (LEFT/RIGHT) *SEE NOTE 14 BELOW	SLATE	BROWN	SLATE	BROWN	SLATE	BROWN	SLATE	BROWN
	ORANGE / VIOLET	ORANGE / VIOLET	ORANGE / VIOLET	ORANGE / VIOLET	ORANGE / VIOLET	ORANGE / VIOLET	ORANGE / VIOLET	ORANGE / VIOLET
	SLATE / YELLOW	SLATE / YELLOW	SLATE / YELLOW	SLATE / YELLOW	SLATE / YELLOW	SLATE / YELLOW	SLATE / YELLOW	SLATE / YELLOW
BETA, B, Y, #2	B1-1 +45	B1-2 -45	B2-1 +45	B2-2 -45	B3-1 +45	B3-2 -45	B4-1 +45	B4-2 -45
SECTOR ANTENNA PORT	BLUE	BLUE	BLUE	BLUE	BLUE	BLUE	BLUE	BLUE
BAND (LOW/HI) *SEE NOTES 13 AND 15	WHITE	WHITE	ORANGE	ORANGE	BROWN	BROWN	VIOLET	VIOLET
BEAM (LEFT/RIGHT) *SEE NOTE 14 BELOW	SLATE	BROWN	SLATE	BROWN	SLATE	BROWN	SLATE	BROWN
	ORANGE / VIOLET	ORANGE / VIOLET	ORANGE / VIOLET	ORANGE / VIOLET	ORANGE / VIOLET	ORANGE / VIOLET	ORANGE / VIOLET	ORANGE / VIOLET
	SLATE / YELLOW	SLATE / YELLOW	SLATE / YELLOW	SLATE / YELLOW	SLATE / YELLOW	SLATE / YELLOW	SLATE / YELLOW	SLATE / YELLOW
GAMMA, C, Z, #3	C1-1 +45	C1-2 -45	C2-1 +45	C2-2 -45	C3-1 +45	C3-2 -45	C4-1 +45	C4-2 -45
SECTOR ANTENNA PORT	GREEN	GREEN	GREEN	GREEN	GREEN	GREEN	GREEN	GREEN
BAND (LOW/HI) *SEE NOTES 13 AND 15	WHITE	WHITE	ORANGE	ORANGE	BROWN	BROWN	VIOLET	VIOLET
BEAM (LEFT/RIGHT) *SEE NOTE 14 BELOW	SLATE	BROWN	SLATE	BROWN	SLATE	BROWN	SLATE	BROWN
	ORANGE / VIOLET	ORANGE / VIOLET	ORANGE / VIOLET	ORANGE / VIOLET	ORANGE / VIOLET	ORANGE / VIOLET	ORANGE / VIOLET	ORANGE / VIOLET
	SLATE / YELLOW	SLATE / YELLOW	SLATE / YELLOW	SLATE / YELLOW	SLATE / YELLOW	SLATE / YELLOW	SLATE / YELLOW	SLATE / YELLOW
DELTA, D, #4	D1-1 +45	D1-2 -45	D2-1 +45	D2-2 -45	D3-1 +45	D3-2 -45	D4-1 +45	D4-2 -45
SECTOR ANTENNA PORT	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW
BAND (LOW/HI) *SEE NOTES 13 AND 15	WHITE	WHITE	ORANGE	ORANGE	BROWN	BROWN	VIOLET	VIOLET
BEAM (LEFT/RIGHT) *SEE NOTE 14 BELOW	SLATE	BROWN	SLATE	BROWN	SLATE	BROWN	SLATE	BROWN
	ORANGE / VIOLET	ORANGE / VIOLET	ORANGE / VIOLET	ORANGE / VIOLET	ORANGE / VIOLET	ORANGE / VIOLET	ORANGE / VIOLET	ORANGE / VIOLET
	SLATE / YELLOW	SLATE / YELLOW	SLATE / YELLOW	SLATE / YELLOW	SLATE / YELLOW	SLATE / YELLOW	SLATE / YELLOW	SLATE / YELLOW

FIGURE 1: ANTENNA ORIENTATION



NOTE: ALPHA STARTS AT 0 (NORTH) OR FIRST AZIMUTH AFTER 0
 NOTE: BETA IS FIRST AZIMUTH AFTER ALPHA IN CLOCK-WISE DIRECTION
 NOTE: GAMMA IS FIRST AZIMUTH AFTER BETA IN CLOCK-WISE DIRECTION
 NOTE: DELTA IS FIRST AZIMUTH AFTER GAMMA IN CLOCK-WISE DIRECTION
 NOTE: AZIMUTH IS IDENTIFIED BY THE PANEL, NOT THE ELEMENTS INSIDE



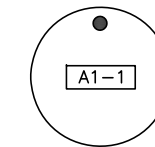
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Version 2.8 – Updated 5/28/2014

CABLE MARKING TAGS

TO PROVIDE ADDITIONAL IDENTIFICATION RF CABLES SHALL BE IDENTIFIED WITH A METAL TAG MADE OF STAINLESS STEEL OR BRASS AND STAMPED WITH THE SECTOR, ANTENNA POSITION, AND CABLE NUMBER. THE ID MARKING LOCATIONS SHOULD BE AS PER "CABLE MARKING LOCATIONS TABLE". THE TAG SHOULD BE ATTACHED WITH CORROSIVE PROOF WIRE OR WAX STRING AROUND THE CABLE. THE TAG SHOULD BE LABELED AS SHOWN BELOW IN FIGURE 2.

FIGURE 2: TAG DETAIL EXAMPLE



NOTE 1*: ALL COLOR CODE TAPE SHALL BE 3M-35 AND SHALL BE INSTALLED USING A MINIMUM OF (3) WRAPS OF TAPE.
 NOTE 2*: ALL COLOR BANDS INSTALLED AT THE TOWER TOP SHALL BE A MINIMUM OF 3" WIDE AND SHALL HAVE A MINIMUM OF 3/8" OF SPACING BETWEEN EACH COLOR.
 NOTE 3*: ALL COLOR BANDS INSTALLED AT OR NEAR THE GROUND MAY BE ONLY 3/8" WIDE. EACH TOP-JUMPER SHALL BE COLOR CODED WITH (1) SET OF 3" WIDE BANDS.
 NOTE 4*: EACH MAIN COAX SHALL BE COLOR CODED WITH (1) SET OF 3" BANDS NEAR THE TOP-JUMPER CONNECTION AND WITH 3/8" COLOR BANDS JUST PRIOR TO ENTERING THE BTS OR TRANSMITTER BUILDING.
 NOTE 5*: ALL BOTTOM JUMPERS SHALL BE COLOR CODED WITH (1) SET OF 3/8" BANDS ON EACH END OF THE BOTTOM JUMPER.
 NOTE 6*: ALL COLOR CODES SHALL BE INSTALLED SO AS TO ALIGN NEATLY WITH ONE ANOTHER FROM SIDE-TO-SIDE.
 NOTE 7*: EACH COLOR BAND SHALL HAVE A MINIMUM OF (3) WRAPS AND SHALL BE NEATLY TRIMMED AND SMOOTHED OUT SO AS TO AVOID UNRAVELING.
 NOTE 8*: X-POLE ANTENNAS SHOULD USE "XX-1" FOR THE "+45" PORT, "XX-2" FOR THE "-45" PORT.
 NOTE 9*: COLORBAND #4 REFERS TO THE FREQUENCY BAND: ORANGE=850, VIOLET=1900. USED ON JUMPERS ONLY.
 NOTE 10*: RF FEEDLINE SHALL BE IDENTIFIED WITH A METAL TAG (STAINLESS OR BRASS) AND STAMPED WITH THE SECTOR, ANTENNA POSITION, AND CABLE NUMBER.
 NOTE 11*: ANTENNAS MUST BE IDENTIFIED, USING THE SECTOR LETTER AND ANTENNA NUMBER, WITH A BLACK MARKER PRIOR TO INSTALLATION.
 NOTE 12*: ONLY "SECTOR-SPLIT" ANTENNA COAX SHALL CONTAIN A 5TH COLORBAND TO INDICATE "LEFT" OR "RIGHT" BEAM.
 NOTE 13*: "SECTOR-SPLIT" ANTENNA COAX SHALL USE BLACK TAPE AS A PLACEHOLDER ON MAINLINE FOR COLORBAND #4 (FREQ BAND)
 NOTE 14*: "SECTOR-SPLIT" ANTENNAS SLATE FOR THE LEFT BEAM, AND YELLOW FOR THE RIGHT BEAM
 NOTE 15*: "LOW" BAND REFERS TO 700MHZ OR 850MHZ, "HI" BAND REFERS TO 1900MHZ OR 2100MHZ

CABLE MARKING LOCATIONS TABLE		
TAPE	TAG	LOCATIONS
X		EACH TOP JUMPER SHALL BE COLOR CODED WITH (1) SET OF 3" WIDE BANDS.
X		EACH MAIN COAX SHALL BE COLOR CODED WITH (1) SET OF 3" WIDE BANDS NEAR THE TOP-JUMPER CONNECTION AND WITH (1) SET OF 3/4" WIDE COLOR BANDS JUST PRIOR TO ENTERING THE BTS OR TRANSMITTER BUILDING.
	X	MARKING TAGS SHALL BE ATTACHED AT CABLE ENTRY PORT ON THE INTERIOR OF THE SHELTER
X		ALL BOTTOM JUMPERS SHALL BE COLOR CODED WITH (1) SET OF 3/4 " WIDE BANDS ON EACH END OF BOTTOM JUMPER.

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D	11/11/25	FINAL CDs ISSUED FOR CONSTRUCTION	PB	RG	RG
C	06/24/25	90% CDs ISSUED FOR REVIEW	PB	RG	RG

SCALE: AS SHOWN DESIGNED BY: DRAWN BY:

AT&T MOBILITY

COAX COLOR CODING

DRAWING NUMBER	REV
IL0776- A08	G

MIDWEST FIBER-OPTIC JUMPER COLOR CODE STANDARD (Version 2.8 – Updated 5/28/2014)

SECTOR	TECHNOLOGY	BAND	RADIO NAME	COLOR CODE				NOTES
A	LTE	700	LTE-700-A1	RED	ORANGE	BROWN	VIOLET	
A	LTE	2100	LTE-2100-A2	RED	ORANGE	WHITE	VIOLET	
A	LTE	2100	LTE-2100-A3	RED	ORANGE	WHITE	BROWN	"A2" MODULE, SEE NOTE 1 BELOW
A	UMTS	850	UMTS-850-A4	RED	SLATE	VIOLET	VIOLET	
A	LTE	850	LTE-850-A4S	RED	ORANGE	VIOLET	YELLOW	"TECHNOLOGY-SPLIT"
A	UMTS	1900	UMTS-1900-A5	RED	SLATE	ORANGE	VIOLET	
A	LTE	1900	LTE-1900-A5S	RED	ORANGE	ORANGE	YELLOW	"TECHNOLOGY-SPLIT"
A	LTE	1900	LTE-1900-A6	RED	ORANGE	ORANGE	SLATE	"A2" MODULE, SEE NOTE 1&2 BELOW
A	LTE	700D/E	LTE-700DE-A7	RED	ORANGE	YELLOW	VIOLET	
A	LTE	WCS	LTE-WCS-A8	RED	ORANGE	SLATE	VIOLET	
A	LTE	850	LTE-850-A9	RED	ORANGE	VIOLET	VIOLET	
A	LTE	1900	LTE-1900-A10	RED	ORANGE	ORANGE	VIOLET	
A	LTE	1900	LTE-1900-A11	RED	ORANGE	ORANGE	BROWN	"A2" MODULE, SEE NOTE 1 BELOW
B	LTE	700	LTE-700-B1	BLUE	ORANGE	BROWN	VIOLET	
B	LTE	2100	LTE-2100-B2	BLUE	ORANGE	WHITE	VIOLET	
B	LTE	2100	LTE-2100-B3	BLUE	ORANGE	WHITE	BROWN	"A2" MODULE, SEE NOTE 1 BELOW
B	UMTS	850	UMTS-850-B4	BLUE	SLATE	VIOLET	VIOLET	
B	LTE	850	LTE-850-B4S	BLUE	ORANGE	VIOLET	YELLOW	"TECHNOLOGY-SPLIT"
B	UMTS	1900	UMTS-1900-B5	BLUE	SLATE	ORANGE	VIOLET	
B	LTE	1900	LTE-1900-B5S	BLUE	ORANGE	ORANGE	YELLOW	"TECHNOLOGY-SPLIT"
B	LTE	1900	LTE-1900-B6	BLUE	ORANGE	ORANGE	SLATE	"A2" MODULE, SEE NOTE 1&2 BELOW
B	LTE	700D/E	LTE-700DE-B7	BLUE	ORANGE	YELLOW	VIOLET	
B	LTE	WCS	LTE-WCS-B8	BLUE	ORANGE	SLATE	VIOLET	
B	LTE	850	LTE-850-B9	BLUE	ORANGE	VIOLET	VIOLET	
B	LTE	1900	LTE-1900-B10	BLUE	ORANGE	ORANGE	VIOLET	
B	LTE	1900	LTE-1900-B11	BLUE	ORANGE	ORANGE	BROWN	"A2" MODULE, SEE NOTE 1 BELOW
C	LTE	700	LTE-700-C1	GREEN	ORANGE	BROWN	VIOLET	
C	LTE	2100	LTE-2100-C2	GREEN	ORANGE	WHITE	VIOLET	
C	LTE	2100	LTE-2100-C3	GREEN	ORANGE	WHITE	BROWN	"A2" MODULE, SEE NOTE 1 BELOW
C	UMTS	850	UMTS-850-C4	GREEN	SLATE	VIOLET	VIOLET	
C	LTE	850	LTE-850-C4S	GREEN	ORANGE	VIOLET	YELLOW	"TECHNOLOGY-SPLIT"
C	UMTS	1900	UMTS-1900-C5	GREEN	SLATE	ORANGE	VIOLET	
C	LTE	1900	LTE-1900-C5S	GREEN	ORANGE	ORANGE	YELLOW	"TECHNOLOGY-SPLIT"
C	LTE	1900	LTE-1900-C6	GREEN	ORANGE	ORANGE	SLATE	"A2" MODULE, SEE NOTE 1&2 BELOW
C	LTE	700D/E	LTE-700DE-C7	GREEN	ORANGE	YELLOW	VIOLET	
C	LTE	WCS	LTE-WCS-C8	GREEN	ORANGE	SLATE	VIOLET	
C	LTE	850	LTE-850-C9	GREEN	ORANGE	VIOLET	VIOLET	
C	LTE	1900	LTE-1900-C10	GREEN	ORANGE	ORANGE	VIOLET	
C	LTE	1900	LTE-1900-C11	GREEN	ORANGE	ORANGE	BROWN	"A2" MODULE, SEE NOTE 1 BELOW

NOTE 1: A SECONDARY JUMPER TO A2 MODULES IS REQUIRED WHEN A CARRIER BANDWIDTH EXCEEDS 10x10MHZ. A2 COLOR CODE IS REQUIRED.
 NOTE 2: WHEN DEPLOYING 2 LTE CARRIERS WITHIN THE SAME BAND, F1 IS IDENTIFIED BY BROWN, F2 IS IDENTIFIED BY SLATE.

SECTORS	ALPHA	RED
	BETA	BLUE
	GAMMA	GREEN
TECH	UMTS	SLATE
	LTE	ORANGE
FREQBAND	700	BROWN
	850	VIOLET
	1900	ORANGE
	2100	WHITE
	WCS	YELLOW
	700DE	SLATE
PORT	MASTER	VIOLET
	SPLIT/SLAVE	YELLOW
	>10MHZ A2 MODULE F1	BROWN
	>10MHZ A2 MODULE F2	SLATE

NOTE: "RED", "BLUE", AND "GREEN" ARE NOT USED ON ANY OTHER COLOR BAND AND ALWAYS DE-NOTE THE 1st COLOR BAND

WISIL STANDARD FIBER-OPTIC DEPLOYMENT PLANS (Version 2.8 – Updated 5/28/2014)

NOTE: ** DENOTES SPECIAL DEPLOYMENT WHERE RRH IS TECHNOLOGY SPLIT WITH UMTS AND LTE
 NOTE: RRH'S DICTICTED IN PARENTHESES AND ITALICS INDICATE ERICSSON "A2" MODULES

FIBER TRUNK #1

RRH NAME	SECTOR	TECHNOLOGY	BAND	FIBER TRAY ID	FIBER TRAY PORT	SQUID/TRUNK PAIR
LTE-700-A1	A	LTE	700	A	1	1
LTE-700-B1	B	LTE	700	A	2	2
LTE-700-C1	C	LTE	700	A	3	3
LTE-2100-A2 (LTE-2100-A3)	A	LTE	2100	A	4	4
LTE-2100-B2 (LTE-2100-B3)	B	LTE	2100	A	5	5
LTE-2100-C2 (LTE-2100-C3)	C	LTE	2100	A	6	6
LTE-1900-A10 (LTE-1900-A11)						
**LTE-1900-A5s (LTE-1900-A6)	A	LTE	1900	A	7	7
LTE-1900-B10 (LTE-1900-B11)						
**LTE-1900-B5s (LTE-1900-B6)	B	LTE	1900	A	8	8
LTE-1900-C10 (LTE-1900-C11)						
**LTE-1900-C5s (LTE-1900-C6)	C	LTE	1900	A	9	9
LTE-850-A9/LTE-850-A4s	A	LTE	850	A	10	10
LTE-850-B9/LTE-850-B4s	B	LTE	850	A	11	11
LTE-850-C9/LTE-850-C4s	C	LTE	850	A	12	12
SPARE				B	7	13
SPARE				B	8	14
SPARE				B	9	15
SPARE				B	10	16
SPARE				B	11	17
SPARE				B	12	18

FIBER TRUNK #2

RRH NAME	SECTOR	TECHNOLOGY	BAND	FIBER TRAY ID	FIBER TRAY PORT	SQUID/TRUNK PAIR
UMTS-850-A4	A	UMTS	850	C	1	1
UMTS-850-B4	B	UMTS	850	C	2	2
UMTS-850-C4	C	UMTS	850	C	3	3
UMTS-1900-A5	A	UMTS	1900	C	4	4
UMTS-1900-B5	B	UMTS	1900	C	5	5
UMTS-1900-C5	C	UMTS	1900	C	6	6
UMTS-1900-A6	A	UMTS	1900	C	7	7
UMTS-1900-B6	B	UMTS	1900	C	8	8
UMTS-1900-C6	C	UMTS	1900	C	9	9
LTE-700-DE-A7	A	LTE	700DE	C	10	10
LTE-700-DE-B7	B	LTE	700DE	C	11	11
LTE-700-DE-C7	C	LTE	700DE	C	12	12
LTE-WCS-A8	A	LTE	WCS	B	1	13
LTE-WCS-B8	B	LTE	WCS	B	2	14
LTE-WCS-C8	C	LTE	WCS	B	3	15
SPARE				B	4	16
SPARE				B	5	17
SPARE				B	6	18

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AT&T MOBILITY
 FIBER-OPTIC JUMPER COLOR CODING
 DRAWING NUMBER: IL0776-A09
 REV: G

SITE WORK GENERAL NOTES:

1. THE SUBCONTRACTOR SHALL CONTACT UTILITY LOCATING SERVICES PRIOR TO THE START OF CONSTRUCTION.
2. ALL EXISTING ACTIVE SEWER, WATER, GAS, ELECTRIC, AND OTHER UTILITIES WHERE ENCOUNTERED IN THE WORK, SHALL BE PROTECTED AT ALL TIMES, AND WHERE REQUIRED FOR THE PROPER EXECUTION OF THE WORK, SHALL BE RELOCATED AS DIRECTED BY CONTRACTOR. EXTREME CAUTION SHOULD BE USED BY THE SUBCONTRACTOR WHEN EXCAVATING OR DRILLING PIERS AROUND OR NEAR UTILITIES. SUBCONTRACTOR SHALL PROVIDE SAFETY TRAINING FOR THE WORKING CREW. THIS WILL INCLUDE BUT NOT BE LIMITED TO A) FALL PROTECTION B) CONFINED SPACE C) ELECTRICAL SAFETY D) TRENCHING & EXCAVATION.
3. ALL SITE WORK SHALL BE AS INDICATED ON THE DRAWINGS AND PROJECT SPECIFICATIONS.
4. IF NECESSARY, RUBBISH, STUMPS, DEBRIS, STICKS, STONES AND OTHER REFUSE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF LEGALLY.
5. ALL EXISTING INACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES, WHICH INTERFERE WITH THE EXECUTION OF THE WORK, SHALL BE REMOVED AND/OR CAPPED, PLUGGED OR OTHERWISE DISCONTINUED AT POINTS WHICH WILL NOT INTERFERE WITH THE EXECUTION OF THE WORK, SUBJECT TO THE APPROVAL OF CONTRACTOR, OWNER AND/OR LOCAL UTILITIES.
6. THE SUBCONTRACTOR SHALL PROVIDE SITE SIGNAGE IN ACCORDANCE WITH THE TECHNICAL SPECIFICATION FOR SITE SIGNAGE.
7. THE SITE SHALL BE GRADED TO CAUSE SURFACE WATER TO FLOW AWAY FROM THE BTS EQUIPMENT AND TOWER AREAS.
8. NO FILL OR EMBANKMENT MATERIAL SHALL BE PLACED ON FROZEN GROUND. FROZEN MATERIALS, SNOW OR ICE SHALL NOT BE PLACED IN ANY FILL OR EMBANKMENT.
9. THE SUB GRADE SHALL BE COMPACTED AND BROUGHT TO A SMOOTH UNIFORM GRADE PRIOR TO FINISHED SURFACE APPLICATION.
10. THE AREAS OF THE OWNERS PROPERTY DISTURBED BY THE WORK AND NOT COVERED BY THE TOWER, EQUIPMENT OR DRIVEWAY, SHALL BE GRADED TO A UNIFORM SLOPE, AND STABILIZED TO PREVENT EROSION AS SPECIFIED IN THE PROJECT SPECIFICATIONS.
11. SUBCONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION. EROSION CONTROL MEASURES, IF REQUIRED DURING CONSTRUCTION, SHALL BE IN CONFORMANCE WITH THE LOCAL GUIDELINES FOR EROSION AND SEDIMENT CONTROL.

STRUCTURAL STEEL NOTES:

1. ALL STEEL WORK SHALL BE PAINTED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS AND IN ACCORDANCE WITH ASTM A36 UNLESS OTHERWISE NOTED.
2. ALL WELDING SHALL BE PERFORMED USING E70XX ELECTRODES AND WELDING SHALL CONFORM TO AISC. WHERE FILLET WELD SIZES ARE NOT SHOWN, PROVIDE THE MINIMUM SIZE PER TABLE J2.4 IN THE AISC "MANUAL OF STEEL CONSTRUCTION". PAINTED SURFACES SHALL BE TOUCHED UP.
3. BOLTED CONNECTIONS SHALL BE ASTM A325 BEARING TYPE (3/4"Ø) CONNECTIONS AND SHALL HAVE MINIMUM OF TWO BOLTS UNLESS NOTED OTHERWISE.
4. NON-STRUCTURAL CONNECTIONS FOR STEEL GRATING MAY USE 5/8" DIA. ASTM A 307 BOLTS UNLESS NOTED OTHERWISE.
5. INSTALLATION OF CONCRETE EXPANSION/WEDGE ANCHOR, SHALL BE PER MANUFACTURER'S WRITTEN RECOMMENDED PROCEDURE. THE ANCHOR BOLT, DOWEL OR ROD SHALL CONFORM TO MANUFACTURER'S RECOMMENDATION FOR EMBEDMENT DEPTH OR AS SHOWN ON THE DRAWINGS. NO REBAR SHALL BE CUT WITHOUT PRIOR CONTRACTOR APPROVAL WHEN DRILLING HOLES IN CONCRETE. SPECIAL INSPECTIONS, REQUIRED BY GOVERNING CODES, SHALL BE PERFORMED IN ORDER TO MAINTAIN MANUFACTURER'S MAXIMUM ALLOWABLE LOADS.

GENERAL NOTES:

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:
OWNER – AT&T
CONTRACTOR – MASTEC
SUBCONTRACTOR – GENERAL CONTRACTOR (CONSTRUCTION)
OEM – ORIGINAL EQUIPMENT MANUFACTURER
2. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING SUBCONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF CONTRACTOR/OWNER.
3. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES. SUBCONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS, AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK.

ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.
4. DRAWINGS PROVIDED HERE ARE NOT TO SCALE AND ARE INTENDED TO SHOW OUTLINE ONLY.
5. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
6. THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
7. IF THE SPECIFIED EQUIPMENT CANNOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE SUBCONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION FOR APPROVAL BY THE OWNER.
8. SUBCONTRACTOR SHALL DETERMINE ACTUAL ROUTING OF CONDUIT, POWER AND T1 CABLES, GROUNDING CABLES AS SHOWN ON THE POWER, GROUNDING AND TELCO PLAN DRAWING.
9. THE SUBCONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT SUBCONTRACTOR'S EXPENSE TO THE SATISFACTION OF CONTRACTOR/OWNER.
10. SUBCONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.
11. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.
12. PRIOR TO START OF CONSTRUCTION, SUBCONTRACTOR SHALL SURVEY THE CONDITION IN ALL AREAS WHERE NEW CONSTRUCTION WILL BE CARRIED OUT. ANY EXISTING DEFECTS DISCOVERED SHALL BE REPORTED IMMEDIATELY TO THE BUILDING OWNER AND PROJECT MANAGER.
13. SUBCONTRACTOR SHALL PROTECT ALL EXISTING ROOF INSTALLATIONS INCLUDING ALL MECHANICAL FASTENING THROUGHOUT ENTIRE CONSTRUCTION DURATION. REPAIR ALL DAMAGES AS REQUIRED.
14. SUBCONTRACTOR SHALL ENSURE THAT ALL ROOF DRAINS WILL NOT BE OBSTRUCTED THROUGHOUT THE ENTIRE CONSTRUCTION DURATION.
15. RE-CERTIFICATION OF EXISTING ROOF WARRANTIES IS PART OF THE WORKSCOPE OF THIS PROJECT. SUBCONTRACTOR SHALL VERIFY WITH BUILDING OWNER REGARDING VALIDITY OF EXISTING ROOF WARRANTIES AND WORK WITH EXISTING ROOF MANUFACTURER TO REACTIVATE ANY EXISTING WARRANTIES THAT WOULD OTHERWISE BE VOIDED BY NEW CONSTRUCTION.

CONCRETE AND REINFORCING STEEL NOTES:

- 1.0 ALL CONCRETE WORK SHALL BE IN ACCORDANCE WITH THE ACI 301, ACI 318, ACI 336, ASTM A184, ASTM A185 AND THE DESIGN AND CONSTRUCTION SPECIFICATION FOR CAST-IN-PLACE CONCRETE.
- 2.0 ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4000 PSI AT 28 DAYS, UNLESS NOTED OTHERWISE.
- 3.0 REINFORCING STEEL SHALL CONFORM TO ASTM A 615, GRADE 60, DEFORMED UNLESS NOTED OTHERWISE. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A 185 WELDED STEEL WIRE FABRIC UNLESS NOTED OTHERWISE. SPLICES SHALL BE CLASS "B" AND ALL HOOKS SHALL BE STANDARD, UNO.
- 4.0 THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR REINFORCING STEEL UNLESS SHOWN OTHERWISE ON DRAWINGS:

CONCRETE CAST AGAINST EARTH.....3 IN.
CONCRETE EXPOSED TO EARTH OR WEATHER:
#6 AND LARGER2 IN.
#5 AND SMALLER & WWF1 ½ IN.

CONCRETE NOT EXPOSED TO EARTH OR WEATHER OR NOT CAST AGAINST THE GROUND:
SLAB AND WALL3/4 IN.
BEAMS AND COLUMNS1 ½ IN.
- 5.0 A CHAMFER 3/4" SHALL BE PROVIDED AT ALL EXPOSED EDGES OF CONCRETE, UNO, IN ACCORDANCE WITH ACI 301 SECTION 4.2.4.
- 6.0 INSTALLATION OF CONCRETE EXPANSION/WEDGE ANCHOR, SHALL BE PER MANUFACTURER'S WRITTEN RECOMMENDED PROCEDURE. THE ANCHOR BOLT, DOWEL OR ROD SHALL CONFORM TO MANUFACTURER'S RECOMMENDATION FOR EMBEDMENT DEPTH OR AS SHOWN ON THE DRAWINGS. NO REBAR SHALL BE CUT WITHOUT PRIOR ENGINEERING APPROVAL WHEN DRILLING HOLES IN CONCRETE. EXPANSION BOLTS SHALL BE PROVIDED BY HILTI OR APPROVED EQUAL.



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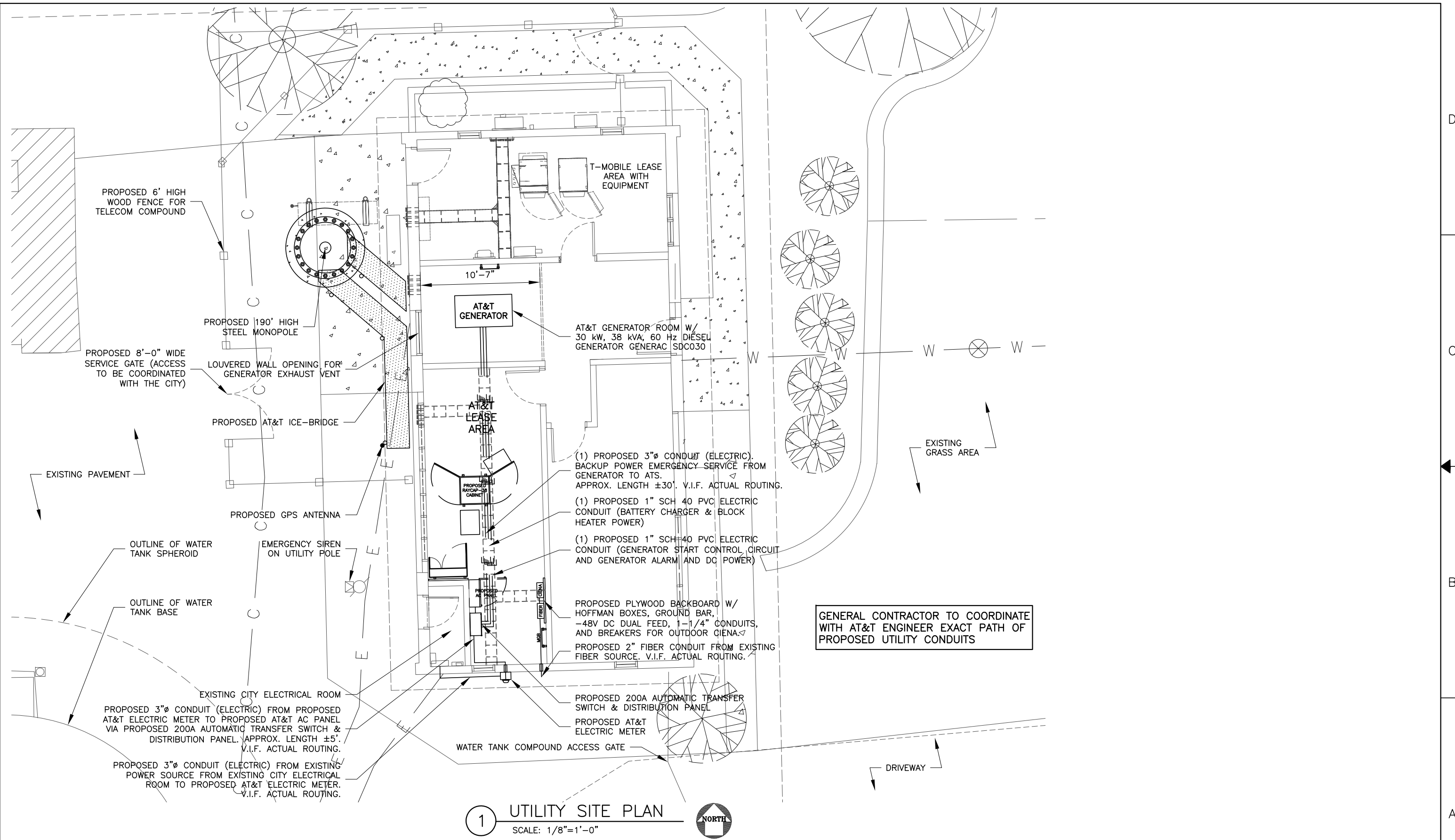


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NO.	DATE	REVISIONS	BY	CHK	APP'D
SCALE: AS SHOWN		DESIGNED BY:	DRAWN BY:		

AT&T MOBILITY

CONSTRUCTION NOTES

DRAWING NUMBER		REV
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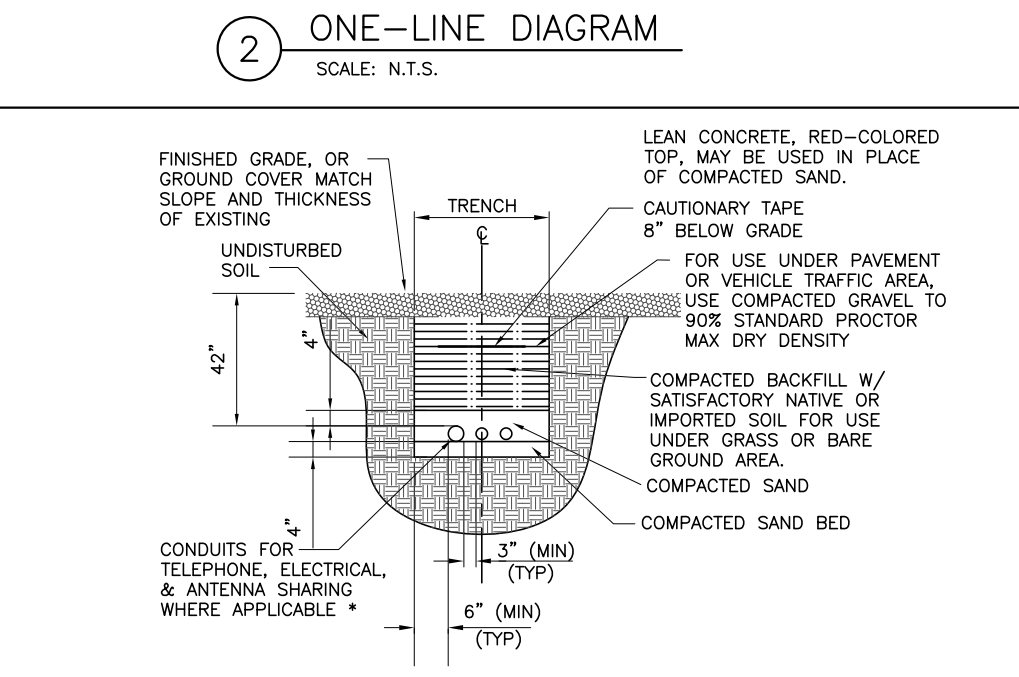
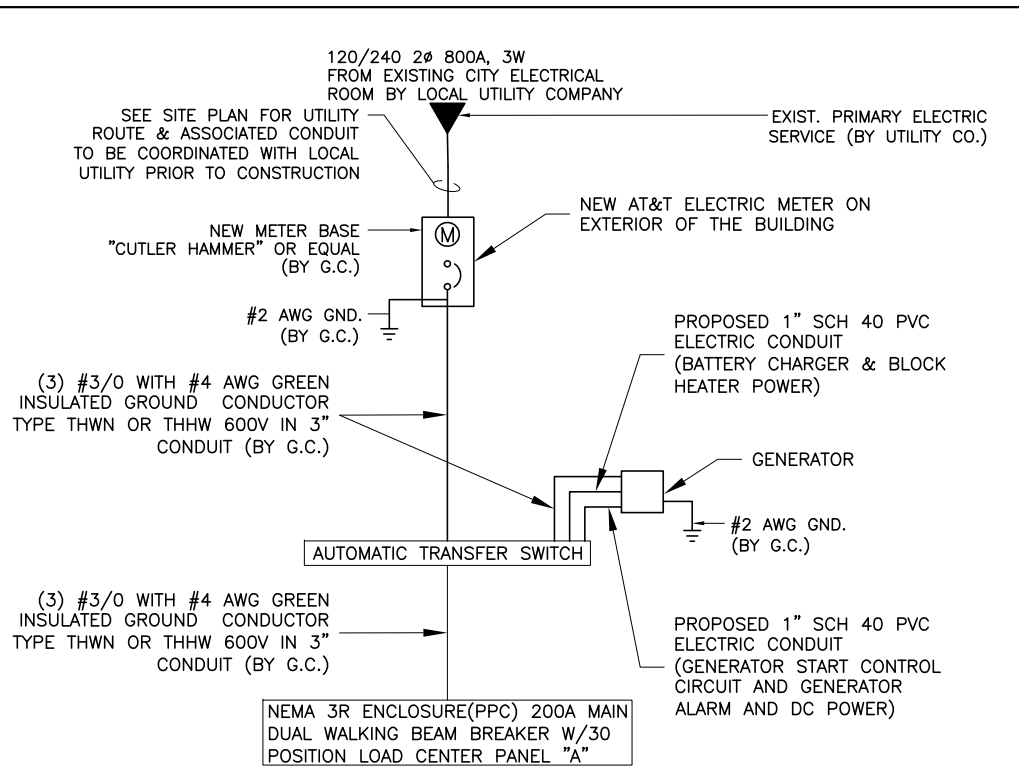
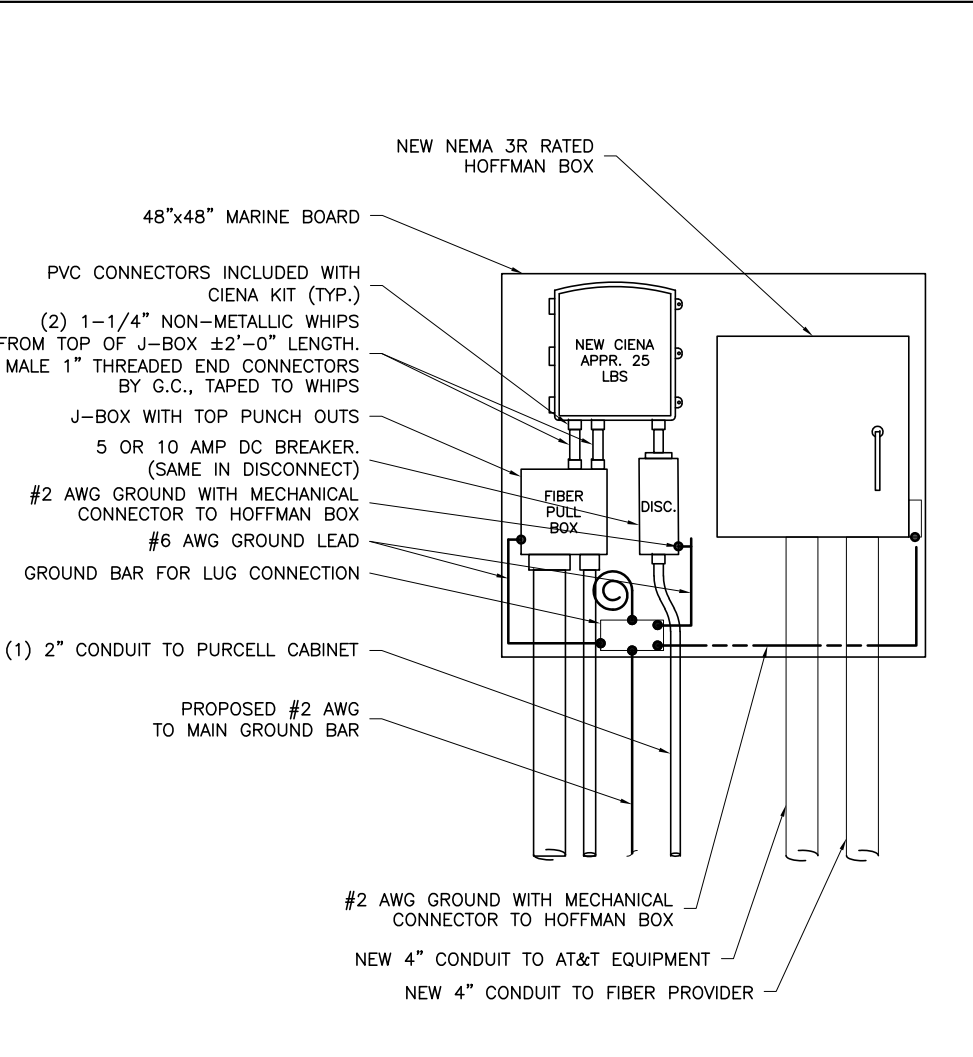
AT&T MOBILITY	
UTILITY PLAN	
DRAWING NUMBER	REV
IL0776-E01	G

ELECTRICAL INSTALLATION NOTES:

- ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS, NEC AND ALL APPLICABLE LOCAL CODES.
- CONDUIT ROUTINGS ARE SCHEMATIC. CONTRACTOR SHALL INSTALL CONDUITS SO THAT ACCESS TO EQUIPMENT IS NOT BLOCKED.
- WIRING, RACEWAY AND SUPPORT METHODS AND MATERIALS SHALL COMPLY WITH THE REQUIREMENTS OF THE NEC.
- ALL CIRCUITS SHALL BE SEGREGATED AND MAINTAIN MINIMUM CABLE SEPARATION AS REQUIRED BY THE NEC.
- CABLES SHALL NOT BE ROUTED THROUGH LADDER-STYLE CABLE TRAY RUNGS.
- EACH END OF EVERY POWER, POWER PHASE CONDUCTOR (I.E., HOTS), GROUNDING, AND T1 CONDUCTOR AND CABLE SHALL BE LABELED WITH COLOR-CODED INSULATION OR ELECTRICAL TAPE (3M BRAND, 1/2" PLASTIC ELECTRICAL TAPE WITH UV PROTECTION, OR EQUAL). THE IDENTIFICATION METHOD SHALL CONFORM WITH NEC & OSHA.
- ALL ELECTRICAL COMPONENTS SHALL BE CLEARLY LABELED WITH ENGRAVED LAMACOID PLASTIC LABELS. ALL EQUIPMENT SHALL BE LABELED WITH THEIR VOLTAGE RATING, PHASE CONFIGURATION, WIRE CONFIGURATION, POWER OR AMPACITY RATING, AND BRANCH CIRCUIT ID NUMBERS (I.E., PANELBOARD AND CIRCUIT ID'S).
- PANELBOARDS (ID NUMBERS) AND INTERNAL CIRCUIT BREAKERS (CIRCUIT ID NUMBERS) SHALL BE CLEARLY LABELED WITH ENGRAVED LAMACOID PLASTIC LABELS.
- ALL TIE WRAPS SHALL BE CUT FLUSH WITH APPROVED CUTTING TOOL TO REMOVE SHARP EDGES.
- POWER, CONTROL, AND EQUIPMENT GROUND WIRING IN TUBING OR CONDUIT SHALL BE SINGLE CONDUCTOR (#14 AWG OR LARGER), 600 V, OIL RESISTANT THHN OR THWN-2, CLASS B STRANDED COPPER CABLE RATED FOR 90 °C (WET AND DRY) OPERATION; LISTED OR LABELED FOR THE LOCATION AND RACEWAY SYSTEM USED, UNLESS OTHERWISE SPECIFIED.
- SUPPLEMENTAL EQUIPMENT GROUND WIRING LOCATED INDOORS SHALL BE SINGLE CONDUCTOR (#6 AWG OR LARGER), 600 V, OIL RESISTANT THHN OR THWN-2 GREEN INSULATION, CLASS B STRANDED COPPER CABLE RATED FOR 90 °C (WET AND DRY) OPERATION; LISTED OR LABELED FOR THE LOCATION AND RACEWAY SYSTEM USED, UNLESS OTHERWISE SPECIFIED.
- POWER AND CONTROL WIRING, NOT IN TUBING OR CONDUIT, SHALL BE MULTI-CONDUCTOR, TYPE TC CABLE (#14 AWG OR LARGER), 600 V, OIL RESISTANT THHN OR THWN-2, CLASS B STRANDED COPPER CABLE RATED FOR 90 °C (WET AND DRY) OPERATION; WITH OUTER JACKET; LISTED OR LABELED FOR THE LOCATION USED, UNLESS OTHERWISE SPECIFIED.
- ALL POWER AND GROUNDING CONNECTIONS SHALL BE CRIMP-STYLE, COMPRESSION WIRE LUGS AND WIRENUTS BY THOMAS AND BETTS (OR EQUAL). LUGS AND WIRENUTS SHALL BE RATED FOR OPERATION AT NO LESS THAN 75°C (90°C IF AVAILABLE).
- RACEWAY AND CABLE TRAY SHALL BE LISTED OR LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE, AND NEC.
- ELECTRICAL METALLIC TUBING (EMT) OR RIGID NONMETALLIC CONDUIT (I.E., RIGID PVC SCHEDULE 40, OR RIGID PVC SCHEDULE 80 FOR LOCATIONS SUBJECT TO PHYSICAL DAMAGE) SHALL BE USED FOR EXPOSED INDOOR LOCATIONS.
- ELECTRICAL METALLIC TUBING (EMT), ELECTRICAL NONMETALLIC TUBING (ENT), OR RIGID NONMETALLIC CONDUIT (RIGID PVC, SCHEDULE 40) SHALL BE USED FOR CONCEALED INDOOR LOCATIONS.
- GALVANIZED STEEL INTERMEDIATE METALLIC CONDUIT (IMC) SHALL BE USED FOR OUTDOOR LOCATIONS ABOVE GRADE.
- RIGID NONMETALLIC CONDUIT (I.E., RIGID PVC SCHEDULE 40 OR RIGID PVC SCHEDULE 80) SHALL BE USED UNDERGROUND; DIRECT BURIED, IN AREAS OF OCCASIONAL LIGHT VEHICLE TRAFFIC OR ENCASED IN REINFORCED CONCRETE IN AREAS OF HEAVY VEHICLE TRAFFIC.
- LIQUID-TIGHT FLEXIBLE METALLIC CONDUIT (LIQUID-TITE FLEX) SHALL BE USED INDOORS AND OUTDOORS, WHERE VIBRATION OCCURS OR FLEXIBILITY IS NEEDED.
- CONDUIT AND TUBING FITTINGS SHALL BE THREADED OR COMPRESSION-TYPE AND APPROVED FOR THE LOCATION USED. SETSCREW FITTINGS ARE NOT ACCEPTABLE.
- CABINETS, BOXES, AND WIREWAYS SHALL BE LISTED OR LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE, AND NEC.
- WIREWAYS SHALL BE EPOXY-COATED (GRAY) AND INCLUDE A HINGED COVER, DESIGNED TO SWING OPEN DOWNWARD; SHALL BE PANDUIT TYPE E (OR EQUAL); AND RATED NEMA 1 (OR BETTER) INDOORS, OR NEMA 3R (OR BETTER) OUTDOORS.

ELECTRICAL INSTALLATION NOTES (CONT.):

- EQUIPMENT CABINETS, TERMINAL BOXES, JUNCTION BOXES, AND PULL BOXES SHALL BE GALVANIZED OR OR EPOXY-COATED SHEET STEEL, SHALL MEET OR EXCEED UL 50, AND RATED NEMA 1 (OR BETTER) INDOORS OR NEMA 3R (OR BETTER) OUTDOORS
- METAL RECEPTACLE, SWITCH, AND DEVICE BOXES SHALL BE GALVANIZED, EPOXY-COATED, OR NON-CORRODING; SHALL MEET OR EXCEED UL 514A AND NEMA OS 1; AND RATED NEMA 1 (OR BETTER) BETTER INDOORS, OR WEATHER PROTECTED (WP OR BETTER) OUTDOORS.
- NONMETALLIC RECEPTACLE, SWITCH, AND DEVICE BOXES SHALL MEET OR EXCEED NEMA OS 2; AND RATED NEMA 1 (OR BETTER) INDOORS, OR WEATHER PROTECTED (WP OR BETTER) OUTDOORS.
- THE SUBCONTRACTOR SHALL NOTIFY AND OBTAIN NECESSARY AUTHORIZATION FROM THE CONTRACTOR/OWNER BEFORE COMMENCING WORK ON THE AC POWER DISTRIBUTION PANELS.
- THE SUBCONTRACTOR SHALL PROVIDE NECESSARY TAGGING ON THE BREAKERS, CABLES AND DISTRIBUTION PANELS IN ACCORDANCE WITH THE APPLICABLE CODES AND STANDARDS TO SAFEGUARD AGAINST LIFE AND PROPERTY.



- NOTES:**
- CONTRACTOR TO VERIFY LOCAL UTILITY REQUIREMENTS FOR DEPTH, SIZE & SEPARATION OF CONDUITS PRIOR TO INSTALLATION. NOTIFY CONSTRUCTION MANAGER IMMEDIATELY OF ANY DISCREPANCIES.
 - CONTRACTOR TO CALL LOCAL UTILITY COMPANY 48 HRS PRIOR TO EXCAVATING FOR UNDERGROUND UTILITY LOCATIONS. LOCATION SURROUNDING EXCAVATED AREA MUST BE PRIVATELY LOCATED FOR NON-PUBLIC UTILITIES.

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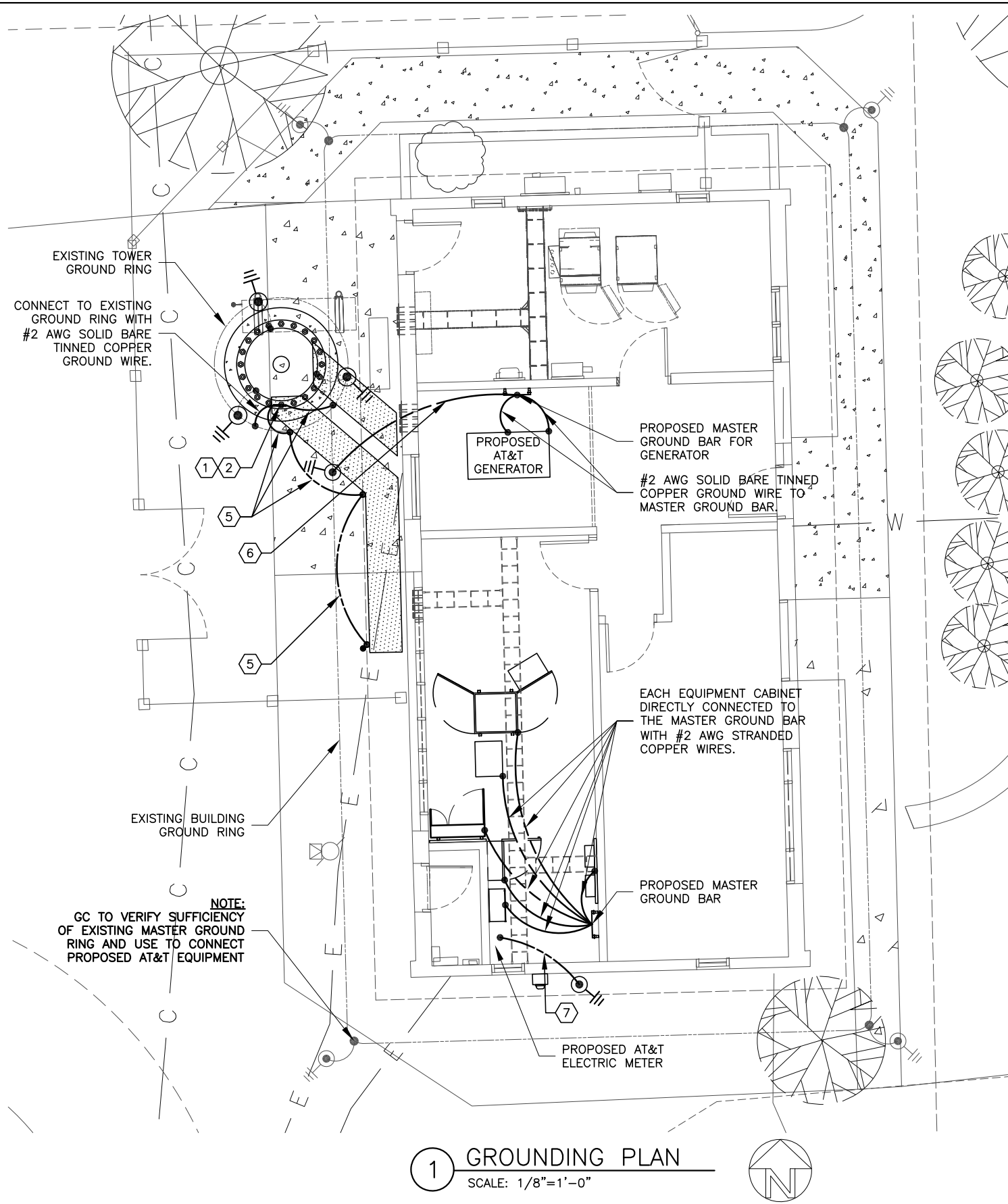
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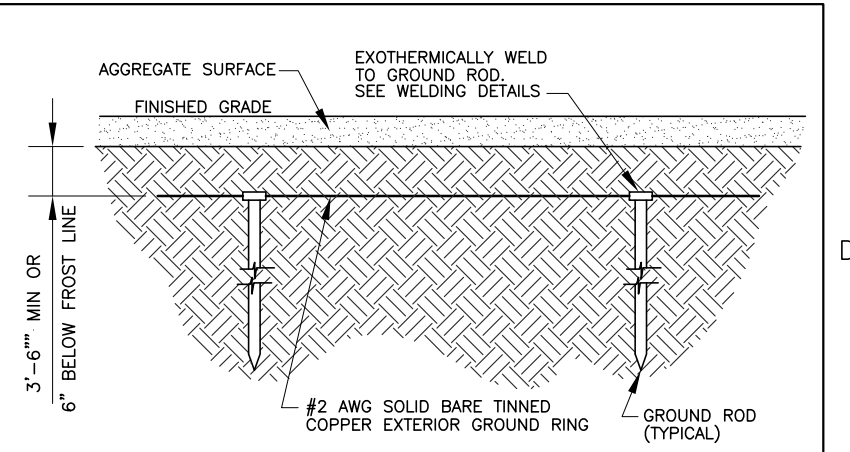
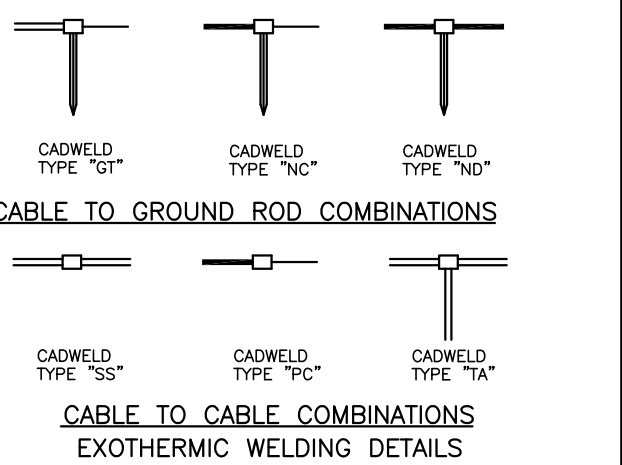
AT&T MOBILITY
ELECTRICAL NOTES & DETAILS
DRAWING NUMBER: IL0776-E02
REV: G



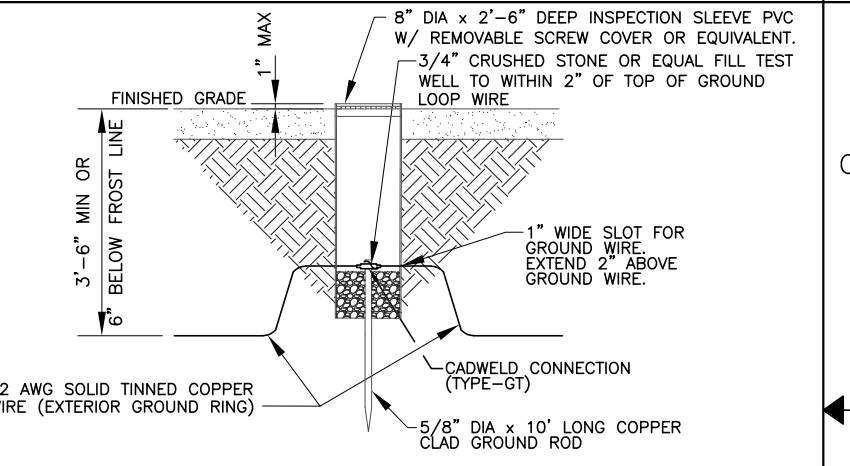
1 GROUNDING PLAN
SCALE: 1/8"=1'-0"

GROUNDING LEGEND	
SYMBOL	DESCRIPTION
	5/8" x 10' COPPER CLAD STEEL GROUND ROD
	5/8" x 10' COPPER CLAD STEEL GROUND ROD WITH INSPECTION SLEEVE
	EXOTHERMIC WELD (CADWELD) (UNLESS OTHERWISE NOTED)
	EXOTHERMIC WELD (CADWELD) WITH INSPECTION SLEEVE

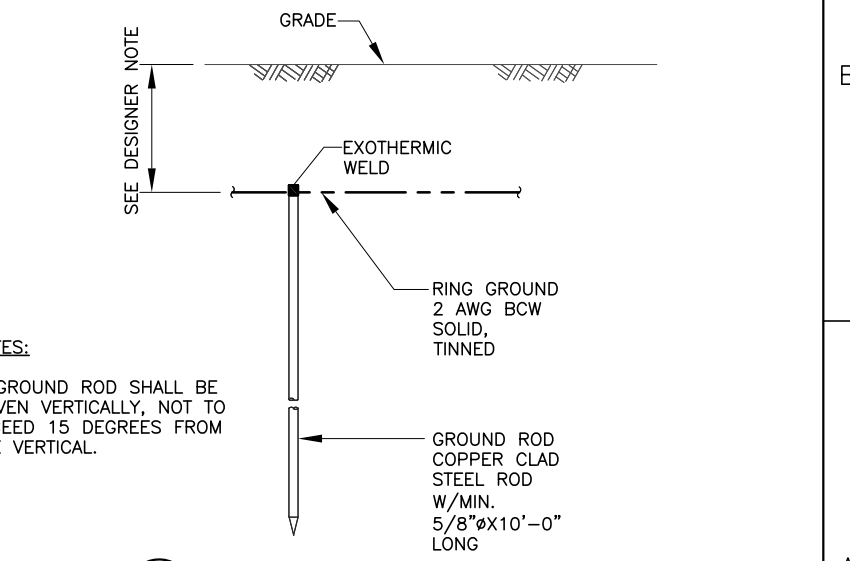
- GROUNDING NOTES:**
- TOWER GROUND BAR:** EXTEND #2 TINNED CU WIRE FROM BURIED GROUND RING UP TO THE TOWER GROUND BAR AND MAKE A MECHANICAL CONNECTION. SECURE GROUND BAR DIRECTLY TO TOWER WITH STAINLESS STEEL MOUNTING MATERIAL.
 - ANTENNA GROUND BAR:** MOUNT GROUND BAR DIRECTLY TO TOWER AT TOP OF COAX RUNS. SECURE TO TOWER WITH STAINLESS STEEL MOUNTING MATERIAL.
 - FENCE GROUNDING:** IF FENCE IS WITHIN 6' OF GROUND RING, EXTEND #2 TINNED CU WIRE FROM BURIED GROUND RING TO FENCE CORNER POSTS AND EXOTHERMICALLY WELD. BOND INTERMEDIATE POST IF REQUIRED TO MAINTAIN 25' MAX SPACING.
 - GATE GROUNDING:** EXTEND #2 TINNED CU WIRE FROM BURIED GROUND RING TO GATE POSTS AND EXOTHERMICALLY WELD.
 - ICE BRIDGE SUPPORT POST GROUNDING:** EXTEND #2 TINNED CU WIRE FROM WIC MASTER GROUND BAR TO ALL ICE BRIDGE SUPPORT POSTS AND EXOTHERMICALLY WELD.
 - GENERATOR GROUNDING:** EXTEND #2 AWG SOLID BARE TINNED COPPER GROUND WIRE TO EXISTING BUILDING GROUND RING, MASTER GROUND BAR, GROUND GENERATOR AND BASE TANK PER MANUFACTURER'S RECOMMENDATIONS.
 - METER GROUND ROD:** COPPERCLAD STEEL, 5/8" DIA. TEN (10) FEET LONG



2 GROUND RING DETAIL
SCALE: N.T.S.



3 GROUND ROD W/ INSPECTION SLEEVE
SCALE: N.T.S.



4 GROUND ROD
SCALE: N.T.S.

- NOTES:**
- GROUND ROD SHALL BE DRIVEN VERTICALLY, NOT TO EXCEED 15 DEGREES FROM THE VERTICAL.

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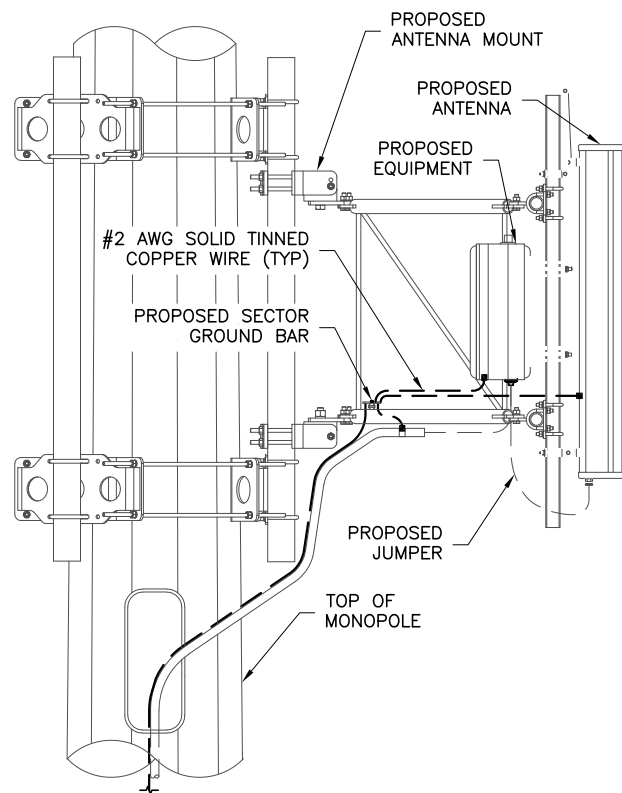
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SCALE: AS SHOWN DESIGNED BY: DRAWN BY:

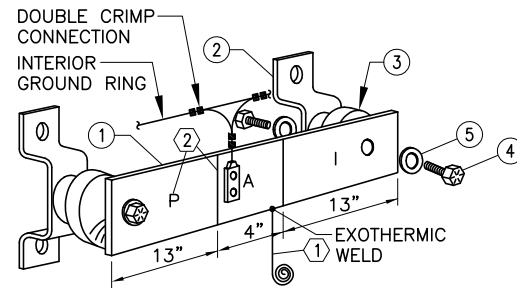
AT&T MOBILITY	
GROUNDING PLAN & DETAILS	
DRAWING NUMBER	REV
IL0776-G01	G



1 ANTENNA & CABLE GROUNDING
SCALE: N.T.S.

NEWTON INSTRUMENT COMPANY, INC.
BUTNER, N.C. OR APPROVED EQUAL

NO.	REQ.	PART NO.	DESCRIPTION
①	1	1/4"x4"x30"	SOLID GND. BAR
②	2	A-6056	WALL MTG. BRKT.
③	2	3061-4	INSULATORS
④	4	3012-1	5/8"-11x1" H.H.C.S.
⑤	4	3015-8	5/8 LOCKWASHER



2 (RGB) REFERENCE GROUND BAR - DETAIL
SCALE: N.T.S.

EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR SHALL HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL IDENTIFY ITS ORIGIN AND DESTINATION.

SECTION "P" - SURGE PROTECTORS

CABLE ENTRY PORTS (HATCH PLATES) (2 AWG)
GENERATOR FRAMEWORK (IF AVAILABLE) (2 AWG)
TELCO GROUND BAR (2 AWG)
COMMERCIAL POWER COMMON NEUTRAL/GROUND BOND (2 AWG)
+24V POWER SUPPLY RETURN BAR (2 AWG)
-48V POWER SUPPLY RETURN BAR (2 AWG)
RECTIFIER FRAMES.
COAX SUPPRESSION

SECTION "A" - SURGE ABSORBERS

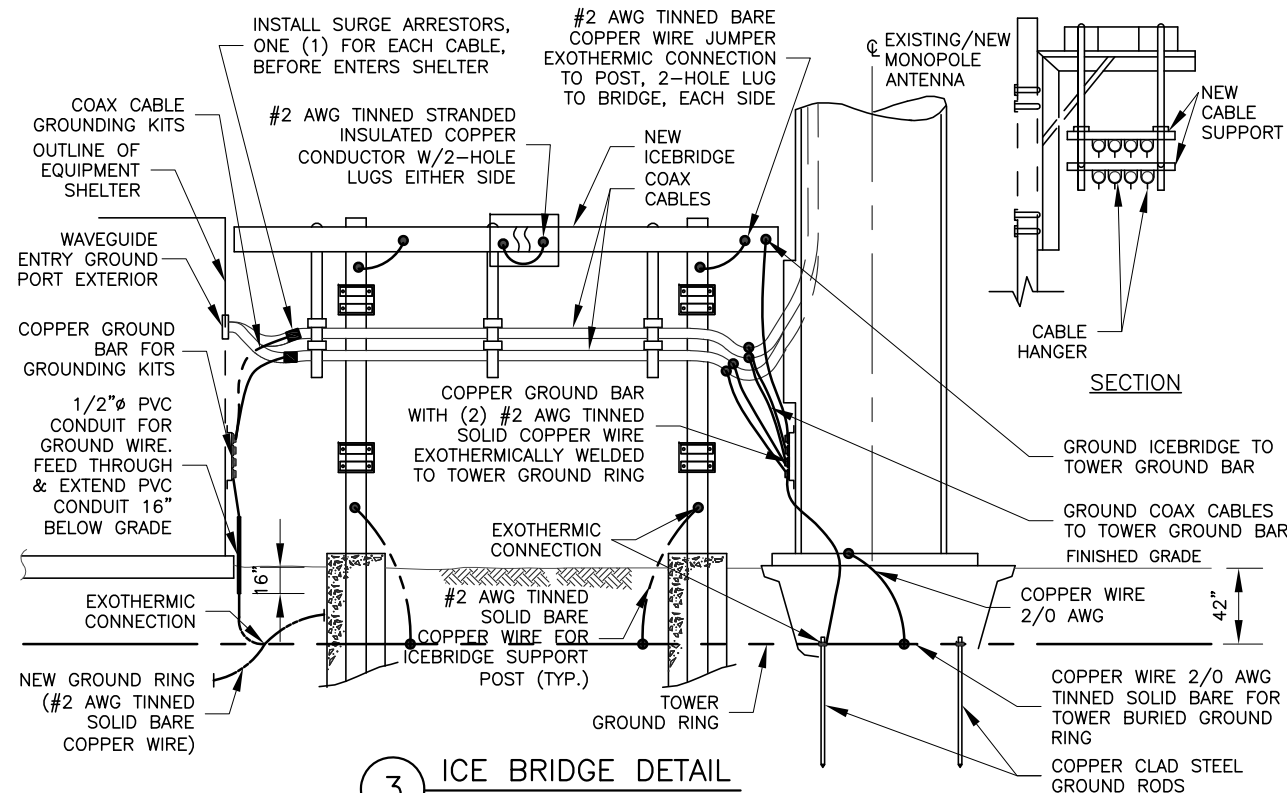
INTERIOR GROUND RING (2 AWG)
EXTERNAL EARTH GROUND FIELD (BURIED GROUND RING) (2 AWG)
METALLIC COLD WATER PIPE (IF AVAILABLE) (2 AWG)
BUILDING STEEL (IF AVAILABLE) (2 AWG)

SECTION "I" - ISOLATED GROUND ZONE

ALL COMMUNICATIONS EQUIPMENT FRAMES.
ISOLATED GROUND BAR - IGB (2 AWG)

DETAIL NOTES:

- EXOTHERMICALLY WELD 2 AWG BARE TINNED SOLID COPPER CONDUCTOR TO GROUND BAR. ROUTE CONDUCTOR TO BURIED GROUND RING AND PROVIDE PARALLEL EXOTHERMIC WELD.
- USE PERMANENT MARKER TO DRAW THE LINES BETWEEN EACH SECTION AND LABEL EACH SECTION ("P", "A", "I") WITH 1" HIGH LETTERS.



3 ICE BRIDGE DETAIL
SCALE: N.T.S.

GROUNDING NOTES:

- ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION, AND AC POWER) SHALL BE BONDED TOGETHER, AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS IN ACCORDANCE WITH THE NEC.
- THE SUBCONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81) FOR GROUND ELECTRODE SYSTEMS. THE SUBCONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS.
- THE SUBCONTRACTOR IS RESPONSIBLE FOR PROPERLY SEQUENCING GROUNDING AND UNDERGROUND CONDUIT INSTALLATION AS TO PREVENT ANY LOSS OF CONTINUITY IN THE GROUNDING SYSTEM OR DAMAGE TO THE CONDUIT & PROVIDE TESTING RESULTS.
- METAL CONDUIT AND TRAY SHALL BE GROUNDING AND MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH #6 AWG COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.
- METAL RACEWAY SHALL NOT BE USED AS THE NEC REQUIRED EQUIPMENT GROUND CONDUCTOR. STRANDED COPPER CONDUCTORS WITH GREEN INSULATION, SIZED IN ACCORDANCE WITH THE NEC, SHALL BE FURNISHED AND INSTALLED WITH THE POWER CIRCUITS TO BTS EQUIPMENT.
- EACH BTS CABINET FRAME SHALL BE DIRECTLY CONNECTED TO THE MASTER GROUND BAR WITH GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRES, #6 AWG STRANDED COPPER OR LARGER FOR INDOOR BTS; #2 AWG STRANDED COPPER FOR OUTDOOR BTS.
- CONNECTIONS TO THE GROUND BUS SHALL NOT BE DOUBLED UP OR STACKED, BACK TO BACK CONNECTIONS ON OPPOSITE SIDES OF THE GROUND BUS ARE PERMITTED.
- ALL EXTERIOR GROUND CONDUCTORS BETWEEN EQUIPMENT/GROUND BARS AND THE GROUND RING, SHALL BE #2 AWG SOLID TINNED COPPER UNLESS OTHERWISE INDICATED.
- ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.
- USE OF 90° BENDS IN THE PROTECTION GROUNDING CONDUCTORS SHALL BE AVOIDED WHEN 45° BENDS CAN BE ADEQUATELY SUPPORTED.
- EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.
- ALL GROUND CONNECTIONS ABOVE GRADE (INTERIOR & EXTERIOR) SHALL BE FORMED USING HIGH PRESS CRIMPS.
- COMPRESSION GROUND CONNECTIONS MAY BE REPLACED BY EXOTHERMIC WELD CONNECTIONS.
- ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED TO THE BRIDGE AND THE TOWER GROUND BAR.
- APPROVED ANTIOXIDANT COATINGS (I.E., CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.
- ALL EXTERIOR GROUND CONNECTIONS SHALL BE COATED WITH A CORROSION RESISTANT MATERIAL.
- MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.
- BOND ALL METALLIC OBJECTS WITHIN 6 FT OF MAIN GROUND WIRES WITH 1-#2 AWG TIN-PLATED COPPER GROUND CONDUCTOR.
- GROUND CONDUCTORS USED IN THE FACILITY GROUND AND LIGHTNING PROTECTION SYSTEMS SHALL NOT BE ROUTED THROUGH METALLIC OBJECTS THAT FORM A RING AROUND THE CONDUCTOR, SUCH AS METALLIC CONDUITS, METAL SUPPORT CLIPS OR SLEEVES THROUGH WALLS OR FLOORS. WHEN IT IS REQUIRED TO BE HOUSED IN CONDUIT TO MEET CODE REQUIREMENTS OR LOCAL CONDITIONS, NON-METALLIC MATERIAL SUCH AS PVC PLASTIC CONDUIT SHALL BE USED. WHERE USE OF METAL CONDUIT IS UNAVOIDABLE (E.G., NON-METALLIC CONDUIT PROHIBITED BY LOCAL CODE) THE GROUND CONDUCTOR SHALL BE BONDED TO EACH END OF THE METAL CONDUIT.
- ALL TOWER GROUNDING SYSTEMS SHALL COMPLY WITH THE REQUIREMENTS OF ANSI/TIA 222-H. THE WIRE SIZE OF THE BURIED GROUND RING AND CONNECTIONS BETWEEN THE TOWER AND THE BURIED GROUND RING SHALL BE MIN 2/0 AWG.

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NO.	DATE	REVISIONS	BY	CHK	APP'D
G	03/06/26	FINAL CDs REVISED NEW GENERATOR MODEL	PB	RG	RG
F	01/30/26	FINAL CDs REVISED PER CITY COMMENTS	PB	RG	RG
E	01/08/26	FINAL CDs REVISED PER CITY COMMENTS	PB	RG	RG
D	11/11/25	FINAL CDs ISSUED FOR CONSTRUCTION	PB	RG	RG
C	06/24/25	90% CDs ISSUED FOR REVIEW	PB	RG	RG

SCALE: AS SHOWN DESIGNED BY: DRAWN BY:

AT&T MOBILITY	
GROUNDING DETAILS & NOTES	
DRAWING NUMBER	REV
IL0776-G02	G